

CANADIAN GEOGRAPHICAL JOURNAL

JANUARY
1937

^{XIV}
VOL. XIII
No. 9



35c A COPY

\$3.00 A YEAR

The Canadian Geographical Society

OTTAWA, CANADA

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Published monthly by THE CANADIAN GEOGRAPHICAL SOCIETY

BROCK BUILDING 172 WELLINGTON STREET - OTTAWA

Editor

Gordon M. Dallyn

This magazine is dedicated to the interpretation, in authentic and popular form, with extensive illustration, of geography in its widest sense, first of Canada, then of the rest of the British Commonwealth, and other parts of the world in which Canada has special interest.

Contents

JANUARY, 1937.

VOLUME ^{XIV}-XXI, No. 9

COVER SUBJECT—2-cent King George V Silver Jubilee Stamp of 1935, bearing portrait of H. R. H. the Duke of York, now His Majesty King George VI; believed to be the only stamp bearing the portrait of the King, as an adult.

	PAGE
ALONG THE AIRWAYS OF THE GOLDEN PLOVER, by JOHN PETER TURNER	489
THE STORY OF McINTYRE, by N. IGNATIEFF	507
Title for Photograph—pages 512 - 513 <i>Night brings the beauty of a lavish setting, while work goes on unceasingly.</i>	
ESKIMO EXODUS, by THOMAS WAYLING	519
THE COLONY OF THE BAHAMAS, by GEORGE KINNEARD	531
LANDSCAPE PHOTOGRAPHY, by K. B. JACKSON	539
EDITOR'S NOTE BOOK	II
AMONGST THE NEW BOOKS	III

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The British standard of spelling is adopted substantially as used by the Dominion Government and taught in most Canadian schools, the precise authority being the Oxford Dictionary as edited in 1929.

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Member Audit Bureau of Circulations.

Membership fee is \$3.00 per year in Canada and other parts of the British Empire, which includes delivery of the Journal, postpaid; in United States and Mexico, \$3.50; in other countries, \$4.00. Make membership fee payable at par in Ottawa.

Entered as second-class matter at the Post Office, Montreal, Canada.

LEFT:—"Winter's Smile", Photo by C. M. Johnston, A.R.P.S., Ottawa.

Migrating Plover and shorebirds on a northern lake.

Photo by R.C.A.F.

Golden Plover approaching its nest; Churchill, Manitoba. "Four blotched eggs lying in the reindeer moss above perpetual ice," (see text page 2).

Photo A. A. Allen Ph.D., Cornell University.





ALONG THE AIRWAYS OF THE GOLDEN PLOVER

by JOHN PETER TURNER

IT is early morning in mid-June; the sun hangs low on the horizon. Arctic springtime involves a land that lies in drear perspective.

No trees relieve a featureless expanse of rock and tundra; naught save a few flower-clusters share an unfriendly soil with mosses, lichens and hungry grasses. Creeks, water-patches, late snowdrifts glisten in the slanting light. South-easterly stretches the bare coastline of Hudson Bay.

Night merges imperceptibly in day; wisps of sound break forth, and soon a medley of bird voices, clear and far-reaching in the thin air, drifts across the tundra. Hosts of waterfowl and shore-birds—curlews, godwits, phalaropes, dowitchers, sandpipers, terns, gulls, geese—all clamorously responsive, all feverishly surrendering to the nuptial season, commingle on the margins of the ponds and lowlands. Longspurs rise in ecstasies from barren uplands. Snow buntings scatter their offerings to the mounting day.

Above the sombre wastes a plover flies, returning on the breeze from distant feeding—a compact though slender creature of the air with graceful wings, black undersides and gilded mantle. His searching cry sounds intermittently as, narrowing, he pitches down, close to a nest half-hidden on the tundra. The one he seeks runs nimbly at his calling, then, circling in widening surveys, fades in the distant blue. She too has put the wind in her wings to follow the beloved quest by low-land edges, and yielding inherently to

parent instinct, has shared her maternal trust. Now scurrying back and forth, now stopping at intervals as though to listen, her helpmate disappears, naught but his conspicuous white stole betraying his presence as he nestles closely over four blotched eggs lying in the reindeer moss above perpetual ice.

Arctic summer comes—the season of unbroken sunlight—varied by cloud and storm. The height of surrender claims the vast bird nursery of the North. All is agog with marshalling of young, and feeding. Alarm-notes and signals have replaced the springtime calls; unrest and anxiety crowd the busy hours. In a miraculously brief space young broods are fluttering; and, though no more perhaps than six weeks have elapsed since their arrival, adults begin to thrill with the possessive stimulus that brought them hither. Early fledglings scatter, shifting for themselves; and four young golden plover—pale-breasted, dressed in obscure dusk and greenish-yellow—accustomed already to diminishing attention from their elders, search out their fare across the barrens.

Gradually the nights grow dim; the air turns chill. The vanguard of a restless throng begins to drift. Companies of adults, strong of flight, trickle from north and west. By mud-flats, shorelines, waterways and uplands, flocks assemble, touring to south and east. A persistent flow of life is under way; the primordial call has sounded. Plovers, waders, gulls, hawks, pipits, longspurs, sparrows—many others



—forgather kin with kin; and, seized by the thrall of migration, a diverse and divergent host, endless in variety it might seem, turns from its summer haunts. Far to the south, by coastal routes and inland watersheds, by forests, plains and lowlands, forerunners are blazing the airways to be followed. Many will perish from fatigue, storm, predatory foes, and man; and yet the overwhelming passion knows no faltering; no deterrent can dim the urge to reach some far-off goal.

Where the extended arm of Chesterfield Inlet reaches westward from the Bay, myriads of feathered travellers pass or gather. Impatient cohorts in loose or serried flocks beat down from the regions of the great sub-Arctic. Blue waters sparkle in the wind; the salt smell of the sea is in the air; the tide ebbs out, leaving countless pools. Gulls gather casually on crags and shorelines. Hurrying lines of wildfowl pitch among their kindred. Shorebirds cluster eagerly along wet beaches; and several scores of restless golden plover search among the sea-drift. On either side are rounded hills, boulder-strewn and swept of vegetation—a land but scantily relieved of utter nakedness by rude encampments. Putrefying caribou heads, remnants of seals and Eskimo equipments litter the foregrounds of the squalid *tupiks*. To eastward, low windswept islands round out a desolation that merges in the sea.

A boisterous day arrives; the mounting tide rolls in; beaches and sandbars disappear. Confusion rises with the waters. Flocks of sandpipers lift and settle down, only to reappear, breasts gleaming as they wheel and sweep along the flooding landstrips. Far out, loose rafts of wildfowl shift in long formations. Gulls resume their languid wanderings; and the obligation to be again on the wing seizes the golden migrants. A sudden inspiration with the creeping waters; a reassembling of searchers on the sea-drift; a call to stragglers; and a brief cloud of irresistible momentum fades beyond the little Chesterfield mission, to dissolve above the coast south-easterly.

Past the bold Baker Foreland, over the raw Huronian rock that ribs the western littoral, flocks of golden wayfarers take their way. By every tempting shallow to the estuary of the Churchill, winging shorebirds muster. Here, on the blue waters of the roadstead, the sturdy *Nas-copie* pauses at anchor on her long patrol

to Chesterfield, Pond Inlet, Craig Harbour and other isolated outposts of the North. Endless panoramas of low hills, of restless surf curling and receding up and down the beaches, of immeasurable breadths of earth and sky and water feature a realm impressive in its emptiness. A great lone land attuned to the sound of waves and cries of wildfowl—the same desolate presence that long ago witnessed the tragedy of Henry Hudson—portrays an unchanging void. Here, sheer space and latitude seem to overwhelm the works of man—the ancient ramparts of Fort Prince of Wales, the giant grain repositories at the Churchill's mouth.

Intermittently, the flocks of golden sojourners press on—now skimming low, now mounting high in air, whistling as they come, tarrying occasionally on wave-washed shores, and, true to tradition, following the airways of the centuries. Less than a fortnight in the rear, companies of young are following. Most of these will tour by stages to the inland flightway of the Mississippi. Those of the far-off western tundras are winging toward the islands of the South Pacific. Other travellers, seized by impatient instinct, share the long coastal route of Hudson Bay. Gulls, terns, geese, shorebirds by the thousands—and yet a sorry remnant of the hordes of bygone time—flock down by day and night, to feed and rest on tidal flats and low-spread shorelines.

August sees the stream of migration at the full. Comes a day chilled by a northern blow and sleet. Far out, the rumble of the surf carries a portent; a flowing tide sweeps shoreward, stirring the feathered throngs. Contagious restlessness again sets in; and, yielding to the call, flocks upon flocks of migrants lift on the warning wind. High above the waters, the last compact company of adult plover fades toward the east.

From the lonely inland sea a wilderness of rock-bound lakes and rivers, of muskegs and barren hills, of stunted birch and juniper stretches to Labrador. Evergreen beds of black crowberry carpet rocky plateaus, where ptarmigan and sharp-tail grouse share unmolested freedom. In the frost-tinged nights small fruitings have begun to colour; autumn maturity creeps o'er ridge and hollow. Whisperings and faint call-notes float upon the air as unseen travellers cleave the hours of dark. With each rising of the sun, tiny wayfarers come



Bic on the St. Lawrence.

Photo by R.C.A.F.

Churchill, Hudson Bay, showing old Fort Prince of Wales.

Photo by R.C.A.F.



searching from low shrub to rocky crag, from tree to tree; and, sweeping and circling in their scattered companies, the voyaging plover from the tundras tarry, gleaning the berries from the open uplands.

At last, fat and fortified, the golden ranks move on. Inherent instinct has sought out rich harvests against inherent need—a prodigious flight is soon to drop the ill-nourished and the weaklings.

The northern hinterland of Quebec is left behind. By scattered airways, by the Mistassini and the Peribonka, past Lake St. John to the Saguenay, high over the great Laurentian Hills, or following Labrador to the sea-green gulf of the St. Lawrence, seldom stopping, traversing wide realms of rock and forest, obsessed by the hysteria that will not be denied, the aerial adventurers tour aslant the winds. Soon the surge and sigh of open waters, the call of feeding grounds by skirting shorelines, the lift and thrust of the prevailing "sou'westerly"—all sweet to the plover heart—hold out their welcome. Ships ply inward toward Montreal or outward to the sea. The gulf ports of Tadoussac and Rimouski lie in opposite and nether distance. Near the little settlement of Bic, on the south shore, a flock of winging travellers settles down, eagerly racing along the tidal bars and patches; but the sou'westerly freshens, the glow of migration burns anew, and, always favouring flight across the winds, the tireless searchers assemble and are gone.

A brief lift south-easterly over the Restigouche Valley to the Bay of Chaleur, to rest and feed again, thence down the New Brunswick shores by easy stages, past Miramichi, the vicinities of Richibucto and Shediac—stopping at favoured spots—a mere jump over the neck of land past Sackville and Amherst to the Bay of Fundy; and Canada is all but left behind. Every essential has been found along the way, but mishaps and dangers have been ever present. Guns have taken toll; falcons and other predators have swooped among the flocks; storms have scattered the incautious. Upon the stored tissues from the tidal-flats and uplands much depends.

September approaches, shedding her colours by the fields and woodlands; maples and sumachs catch the autumn flares; goldenrods and asters deck the waysides. Countless land-birds follow inshore flightways, and, out on the stretches uncovered by the tide and round the tempting bays

and harbours, hosts of shorebirds gather. Wanderers drift in by varying routes to join their kindred; others are coasting leisurely toward Nantucket; stragglers and injured are lagging far behind.

A roaring sou'wester rides the Atlantic, herding great, green rollers that break far out and, seething as they come, race shoreward. Cape Sable on the Nova Scotia tip resounds to an age-old dirge. Gulls soar and swoop with eerie cries, and, clustered motionless, headed to the wind, a serried group of determined golden plover pauses expectantly upon the sea-fringe.

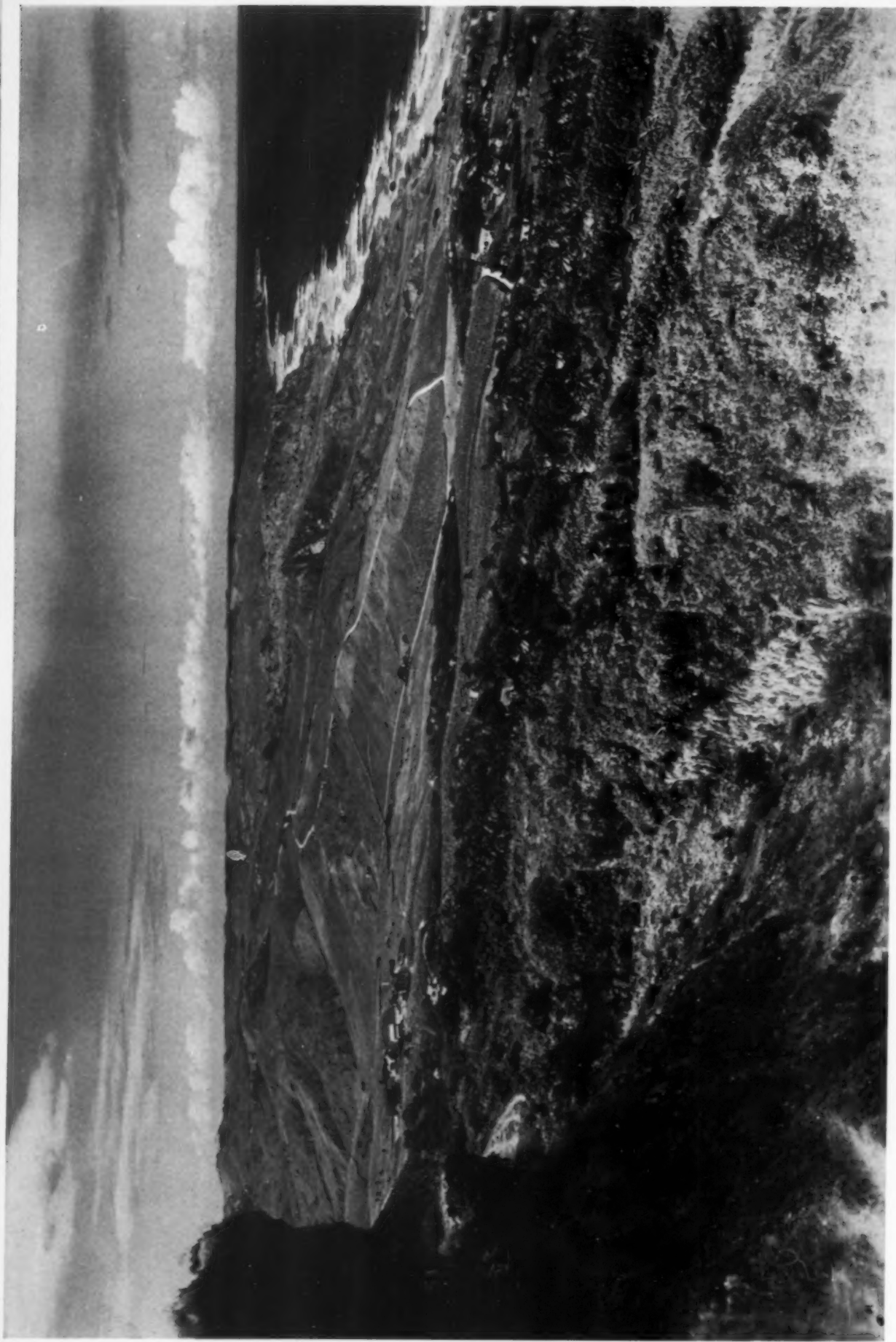
From here the invisible airway lies across the waters!

September day draws in, spreading grey veils athwart the east; a slanting sun transforms the west to streams of gold. Momentary excitement seizes the voyagers on the tide-flat; a weird and melancholy whistle is snatched up by the wind—and they are off! Thrust back, they sweep inshore, circle and dip low, return along the sandstrips calling plaintively; then, straightening their course south-easterly, they head for the open sea. Daylight fades, leaving only the blackness of the night, and stars.

The sou'wester roars its harmony above the waters, but unfalteringly the golden aerialists press on. Hour by hour, racing aslant the gale with swift, deep wing-thrusts, holding resolutely and mysteriously to their course, they drive into the night. A great ship, bound on her charted way with ports ablaze and music thrumming, ploughs through the wind and waves; and, seemingly attracted by the glare, lone travellers of the sea are heard. Momentarily a wraith of hurrying forms circles the mastheads and is gone.

Gradually the dawn creeps up the east. Bermuda lies dimly on the distant seascape; but, intent on far-off climes, the feathered mariners sweep on. Ever the tireless urge persists; ever the way leads over heaving waters—now slanting west-erly across a shifting wind.

By late afternoon, Puerto Rico and Haiti are immediately below the skyline; but the wind pipes stronger, swinging round to north, and again the flightway turns to south by east. The sun sinks low as the region of the 'trades' is reached. Lurid clouds come banking down; a semi-tropical tempest blots out the lingering day, tossing huge whitecaps on an angry sea. 'Neath blinding stabs of light and



Bathsheba, from Hackleton Cliffs, Barbados, where the golden plover alight for a period of rest after their long flight from Canada.

Photo by S. J. Hayward, Montreal

ALONG THE AIRWAYS OF THE GOLDEN PLOVER

roll of thunder, deluged by crushing rain, battling the sudden menace of the elements, the birds strive valiantly to wrest the wind. The flock breaks up, reforms, and struggles on, leaving bewildered wanderers behind. Several surrender to the clutching waves; others are hurled before the wind—perchance to the Bahamas. But, as the gale subsides, the tenacious flock holds to the south and east. Indomitable wingpower masters unerringly another night!

Eventually the waters pale, and, as the little clouds along the trade wind blush with reflections from the eastern sky, a violet blur emerges from the sea. Mid-morning reveals a land of richest verdure fringed by waving palm trees. Long rollers foam on coral reefs and shorelines. Barbados, the most easterly of the West Indian Islands, basks like an emerald in a sheen of blue.

From out the north, the pilgrims of the air stoop to the yellow sands. Cape Sable on the Nova Scotia tip lies two thousand miles away by shortest reckoning. The initial test is won! But every island feeding-ground is manned with guns. Cruel welcomes resound along the flats and sandbars, crushing and crippling; and, woefully reduced in numbers, utterly defeated in attempts to rest and feed, survivors regather and move on; on past the forest heights of Trinidad to where the Orinoco spreads fanwise to the sea. Here nature long ago set up a wild life sanctuary enhanced by richest flowers and gaudy butterflies, a region of riotous beauty and romance—the ancient Pearl Coast of the Spanish Main—where Columbus “pushed his prow into the setting sun and made West East.” Here a great resting place of river silt and jungle awaits innumerable bird visitors—a waterfowl and landbird El Dorado.

But the flame of migration glows undimmed; the impetus to seek out farther climes drives on anew; and, touring inland to the Venezuelan llanos or coastwise aslant the trades to the Guianas, the golden aviators drift upon their way. Flocks of young are following from the flightway of the Mississippi. Beyond lie vast solitudes of forest, grass and mountain. Foaming cataracts plunge to hidden depths.

Broad rivers, harbouring the unwieldy, seal-like manatee and the king of serpents—the huge, aquatic anaconda—move silently between walls of jungle. A realm of tropic verdure, “where no one comes, or hath come, since the making of the world,” awaits the migrants from the Arctic barrens; and, tarrying impatiently by lagoons and grasslands, feeding and resting as they go, the birds move up the Caura, or Paragua, or other Venezuelan feeders of the Orinoco, or up the Essequibo and Corentyne of the Guiana hinterland, surmounting the Pacaraima and Acarai sierras, to cross the Equator above a dazzling world.

Perpetual summer reigns.

The broad waters of the Amazon are reached, ten miles or more in width and ever widening. The mightiest of rivers, sullen, awesome and untamed, dwarfing by comparison the Mississippi, rolls from the snowfields of the western cordilleras to sunrise in the green Atlantic. By day a humid heat falls mercilessly. Fruits, flowers, giant ferns, majestic palms, orchids of rare beauty, orange trees, coconuts, mangos, bananas, rubber trees, sugar canes and creeping vines form a stupendous and impenetrable garden. Great azure butterflies flit through forest glades. Gaudy parrots and macaws, flamingoes, ibises, white herons, green, blue and red parakeets and dazzling trogons mingle midst masses of nature's handiwork and colouring. Monkeys chatter in the tree-tops. Huge caymans and alligators bask on sunny banks; snakes and reptiles lurk in primal solitudes. Deep shadows fall; oily streams coil lengths like monster serpents; night breezes drift from upland crags down silent gorges. Pumas, jaguars, ocelots, tapirs, peccaries—hosts of night prowlers—leave their dense retreats. Far behind lies a forgotten continent; ahead the vast interior of Brazil.

For a thousand miles, to the great *pantanal*s or swamps, near the headwaters of the Rio Paraguay, forests, river valleys and bold uplands lie strewn in formidable chaos; but, scorning all topography, the flightway is unalterably fixed. Something mysterious and magnetic gives impulse to the golden wings. Up the



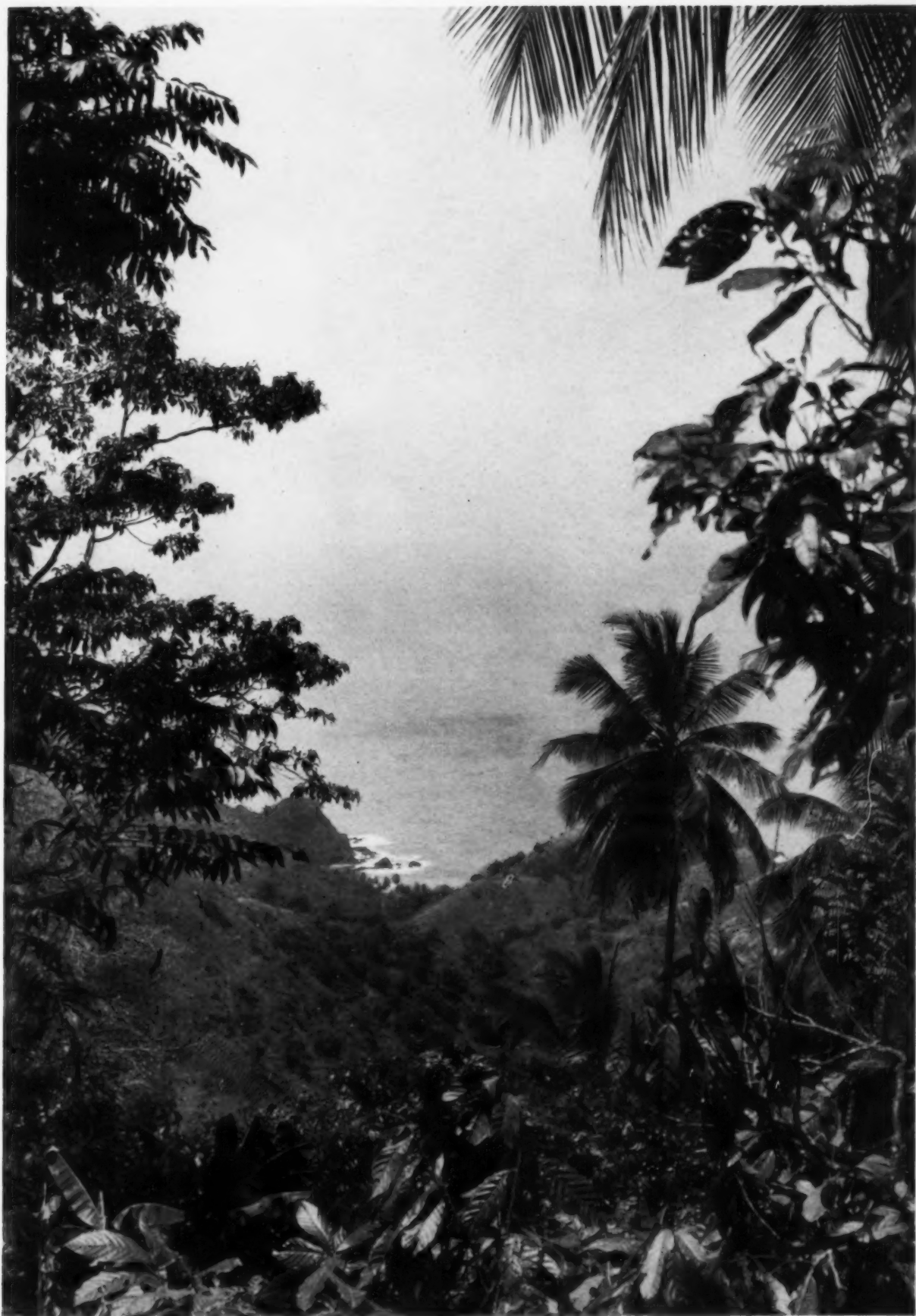


Photo by S. J. Hayward, Montreal
King Peter's Bay, one of the lovely inlets of Tobago, B.W.I., known as Robinson Crusoe's Island.

LEFT:—Winging across velvet nights, the plover flocks pass on. Photo by G. R. D. Watson, Royal Bank of Canada.

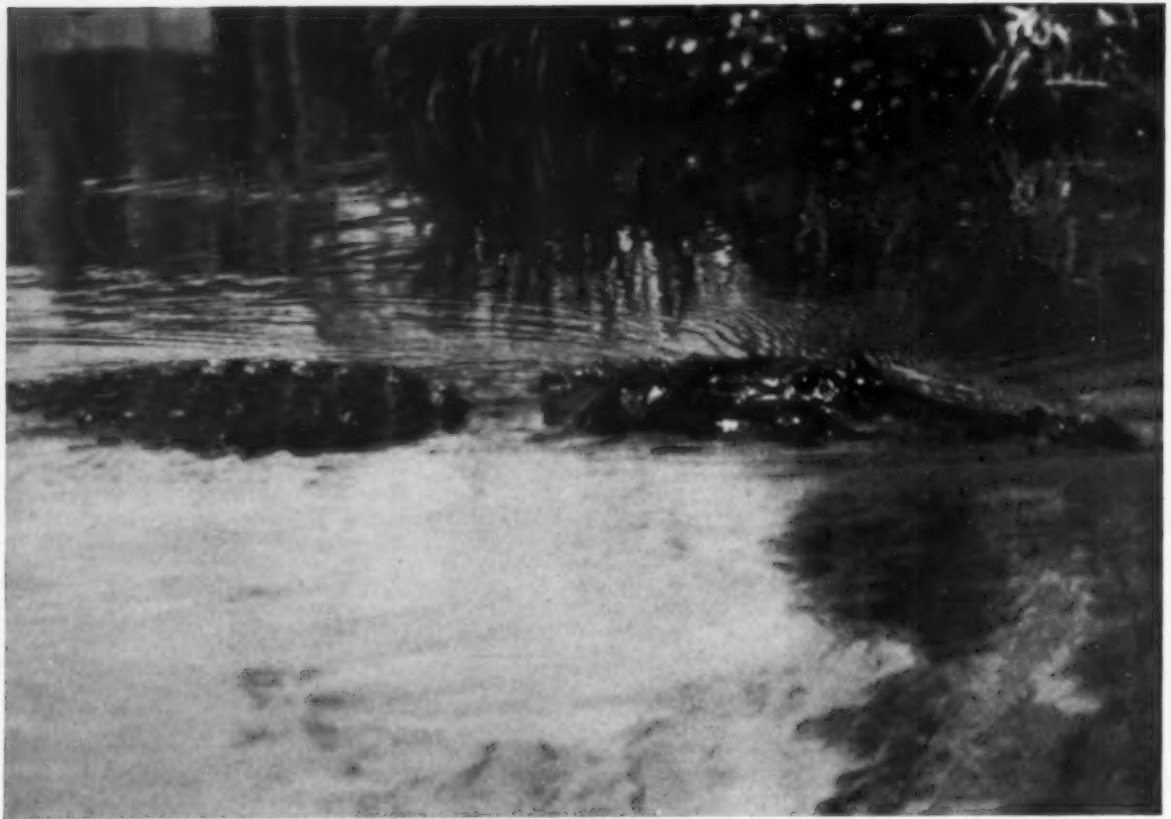


Photo by E. A. McIlhenny.

Alligator or cayman, which inhabits many South and Central American rivers. This animal, closely allied to the crocodile, sometimes grows to a length of 20 feet.

Manatees, herbivorous aquatic mammals, in British Guiana. The fish-like body, with fore limbs and a broad tail, is said to be the origin of many mermaid legends.

Photo by S. J. Hayward, Montreal



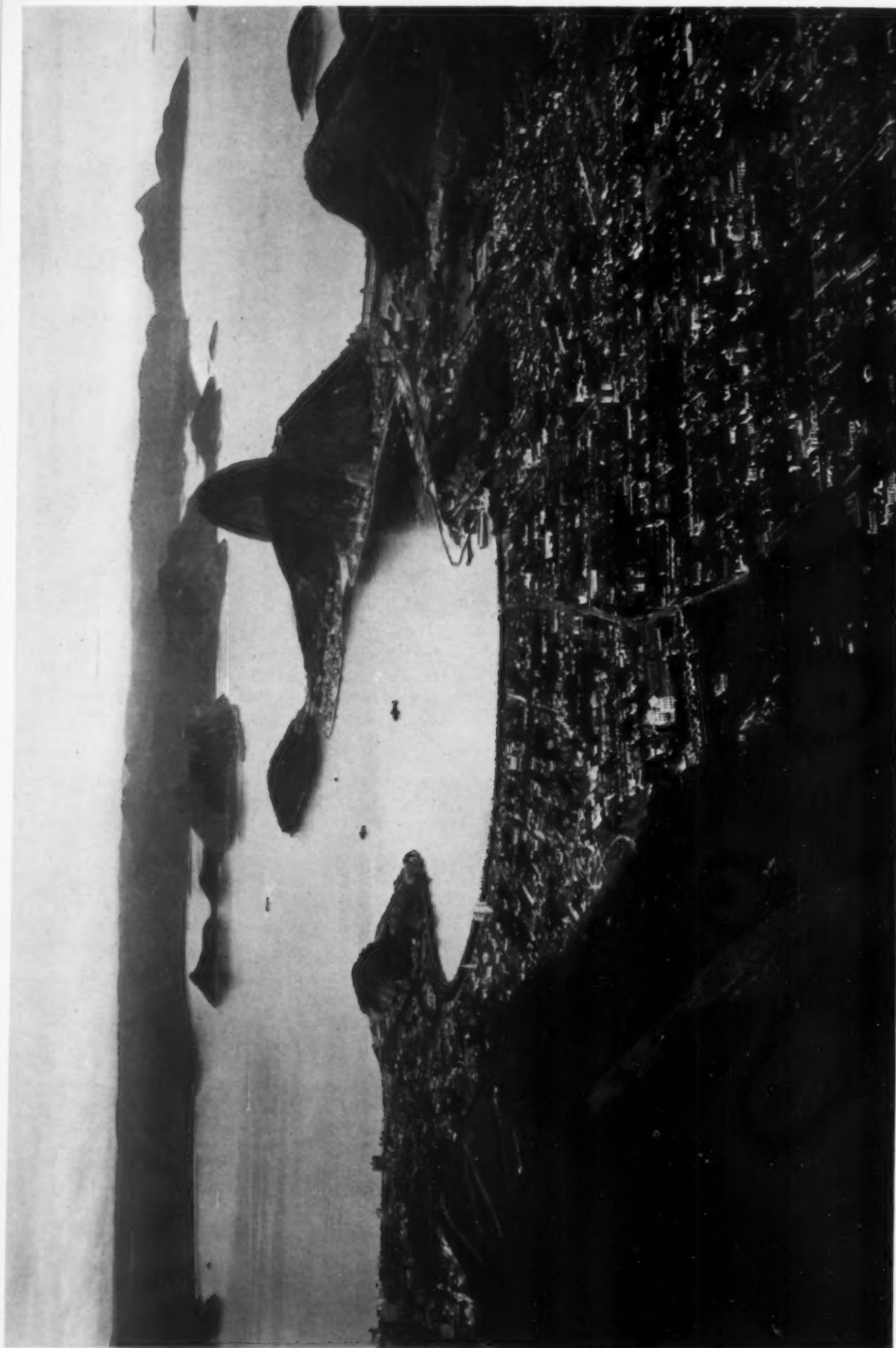
Tapajos, the old inland route of adventuring Portuguese, or the Madeira, or the Xingu, or some Brazilian stream that courses northward to the Amazon, the flocks wing slantwise on the south-east trades, or overland from one chance feeding-ground to another, angling south-westerly toward Bolivia. Low mountains loom amid the forests. Towering silk-cotton trees, nut palms, cassias, cecropias, mimosas, pacovas with huge 'elephant ears,' Brazilian pines and countless other equatorial growths laced with lianas and festooned with flowers stand out in gorgeous contrasts. Parrots, parakeets, innumerable humming-birds, flaming orioles as big as crows, strange little jacamars, bell-birds, tanagers, toucans, variegated and brilliant butterflies enliven a wondrous vegetation. Rapids and cascades race down uncharted valleys. By warm rivers and lagoons, where deer, felines, agoutis, red wolves, coatis, big antbears and smaller animals come to slake their thirsts, caymans dream away the steaming hours. Capybaras, turtles and iguanas flounder and forage. Giant constrictors drag forbidding coils to vantage points in search of prey. In every considerable waterway, the small but formidable *piranha*—a veritable shark among fresh-water fish—lurks, and thirsts for blood.

Gradually the region rises. An immense upland draped in belts of forest—the Plan Alto, the interior plateau of Brazil—calls to the voyageurs from the Arctic; and, loitering through the flaming days, winging across the velvet nights, the persistent travellers reach a realm of grass and scrub, where myriads of insect life afford abundant fare. The wild Nham-biquara land is crossed. Cool breezes and clear-running streams replace the humid heaviness and brown waters of the jungle. The east wind from the borders of the trades now swings the long flightway directly to the south. The divide between the Amazon and the Paraguay is passed. Below stretches the Bolivian plain bordering the great Xarayes swamps. Eastward rises the huge plateau of the Matto Grosso. Far to the south spreads the region of the vast Gran Chaco. Ranches and small settlements appear at intervals. Wide lagoons and swamplands patch the land-

scape. Herons, ibises, darters, muscovy ducks and screamers gather round every watery rendezvous. Jabiru storks of purest white gleam in the distance like snow geese of the north. Varied shorebirds teem on every side. Big spurred lapwings from the Bolivian and Argentine plains, and tiny plover of the tropics, immune to the bondage of migration, share the river flats and margins with their relatives from the distant tundras. A multitude of feathered life from far and wide clusters in common cause, sharing a land of solitude and plenty. And yet the golden restlessness burns on!

The swamplands of the upper Paraguay are visited but soon passed by. Dwindling forests, rich with violet orchids, give way to slender palms. Wet bottom-lands spread this way and that—the haunts of white egrets, rich tiger bitterns, stately herons, crimson flamingoes, roseate spoonbills, cormorants, tree ducks, darters, skimmers, clouds of terns. Ugly alligators and caymen lie on every bank. To the west, on the Chaco side, an interminable plain and potential cattle country extends to the horizon; eastward, an intermittent area of cultivated bananas, oranges and sugar canes borders a seldom-trodden wilderness. Conception and Ascuncion are passed, founded by the conquistadores of Paraguay three-quarters of a century before English and Dutch settlers reached the northern continent. A country of wide prairies and marshes now prevails; and, as the Paraguay joins its great affluent, the Parana, to form the Rio de la Plata, a majestic stream in ever-spreading volume sweeps down past Buenos Aires to the sea.

Adjacent plains, grass-grown and almost treeless, to east and west and far to south—to the Rio Negro on the confines of the bleak and arid steppes of Patagonia—embrace an area as large as all the states of the American Union lying eastward of the Mississippi. Over the Uruguayan portion to the east, or down the coast line to the vast mud-flats of the Bahia Blanco, or out on the Argentine grasslands to the west, the golden cohorts linger; and soon, amid lagoons and lowlands, in a land of scattered *estancias* and *chacras*, the pivots of occupation are established. The tro-



Rio de Janeiro, capital of Brazil and one of the most beautiful cities in the world, having a population of nearly two millions. The Pao de Assucar (Sugar Loaf Mountain, 1,100 feet), a granite cone, overlooks the entrance to a landlocked harbour that is some 15 miles in length and from 2 to 7 miles in width.

Photo by Associated Screen News, Montreal.

pical extravagances of the jungle are forgotten. Spring drifts inland from the equatorial current of the Atlantic. Early hours are chill, but subtle warmth soon falls upon the air; and, absorbed in almost featureless expanse, the central pampas of the Argentine bask in a temperate zone. The coveted goal has been attained! Eight thousand miles away, deep in the Arctic night, Chesterfield cringes before a martyrdom of cold.

The summer of the south draws near—the second in the twelve-month to the northern visitors. Lengthening days and twilights reappear. Lean from their prodigious journey, the golden migrants forage and grow fat. Other travellers from the north, braving the perils of the airways, are reaching the pampas of the Argentine; thousands have succumbed upon the way. Bobolinks, barn swallows, night hawks, other landbirds, yellowlegs, Hudsonian godwits, and at least five separate clans of sandpipers from the northern continent's extremes are now approaching. In turn, flocks of *chorlos*, or winter plover, are leaving for their nesting grounds in Tierra del Fuego and the Falkland Islands. Godwits, scarcely distinguishable from those arriving from the north, take off for the outlying islands and fragments of the great ice continent below; and by a flight-way of 11,000 miles, from Arctic to Antarctic, from the coasts of Baffin Bay to the ice-strewn shores of the Weddell Sea, the Arctic terns—the long-distance masters of the airways—pass upon the wing. Flocks of migrants from the north meet or commingle briefly with those departing for their breeding sites far to the south. Birds of the southern zone—geese, ducks, gulls, waders, and others—trail down the skies, forsaking winter habitats till autumn. But fixed residents and incoming migrants will remain. Out on the wide levels, the noisy spurred lapwings, busy at their mating, are everywhere. Patagonia parrots, long-tailed parakeets (strange colonists from the tropics), flamingoes, jabirus, crested screamers, yellow-billed coots, rose-breasted starlings, tyrant flycatchers, a few courageous humming-birds—hosts of varied species—portray a birdlife of wonderful abundance. At each brief setting of the sun, the weird spring-call of the *martineta*,

the partridge of the pampas, drifts across the grasslands.

This is the far-sought realm!

Summer advances, and the smaller water areas evaporate. The widely-scattered flocks of golden visitors, now donned in the modest plumage of an idle interlude, gather from feeding on the tempting pastorals to pass the noontide hours around the large lagoons. The perilous airways are no more; and yet the over-zealous, dreaming of phantom goals, advance across the westerlies far out on the Patagonian plains. The counterpart of Labrador is reached; by some the heathlike crowberry again is found. A few are wafted southward to a cheerless land where snow-clouds linger through twelve months of the year; but, at last, the migrant fervour dies away. Kindled in an unfathomable past that saw the driftage of the Arctic ice-cap deluge the then warm regions of the north, the inherent impulse to flee—and yet return—slumbers for a space in every breast.

Long days of summer pass, and March approaches. As autumn creeps across the fading pampas, restlessness again sets in. Southern flocks, now homeward bound, assume their winter plumage; northern visitors take on their nuptial featherings; the fascination of the airways reawakens. Cooling breezes from the distant Andes inspire impatient wings; and, true to an ancient call, the golden flocks are gone.

Crossing the westerlies, the flocks trend northward, then angle to the west aslant the north-east trades. Far away, toward the Chilean borders, the far-flung Argentine steppes flanking the Andean cordilleras appear in long blue outline. Herds of cattle strew the plains; settlements, small villages, and towns are passed; wheatlands intersperse the *estancias*. The return to the Canadian tundras is under way. By the shortest, treeless route, the magnetic urge beckons the feathered throngs. Food is everywhere abundant, but, as Bolivia is approached, the grasslands lie hemmed by towering mountains. Glittering peaks fringe the pampas on the west and north. Eventually, on every front, a stupendous region threatens the tiny travellers; a formidable barrier disrupts the airway—



Photo by Associated Screen News, Montreal.

Bird sanctuary in zoological gardens of Buenos Aires, which are among the most beautiful in the world, containing a large collection of animals and birds.

Plaza Del Congreso, one of the largest and most beautiful in Buenos Aires, and the Palace of Congress, built in 1910 to commemorate the centenary of the revolution against Spain.

Photo by Associated Screen News, Montreal.



to the north of west, the Great Cordillera looms, north-east the Cochabamba and Chiquitos Sierras, immediately in front, the great massif of south-central Bolivia. The flightway sheers before the tremendous terrain, and splits. Persistent flocks veer easterly, following the extension of the plains, probably to turn west again across Peru or Ecuador to the Pacific shores, or, perhaps, by sustained flights, to continue across the Amazonian watershed to the llanos of Venezuela or the lagoons and savannahs of eastern Colombia. Others—the majority seemingly—directly assail the soundless, lonely world north-westward; and, rising to clear the mountain barrier, they face a more formidable rampart. Mountains upon mountains, summits upon summits mingle in the clouds. The home of the condor is traversed in the mists. Wintry peaks, tropical valleys, great elevated plateaus, dim defiles—vast conglomerates, disruptions and confusions rolled together by the titanic forces of the past—burden the Bolivian interior for a breadth of three hundred miles. Wind-swept and inhospitable, a cheerless zone above the tropics presents a hazard to be crossed hurriedly, and soon the shallow Lake Pampa is reached amid the farther slopes. Follows a wide valley, affording a natural flightway to the north. The Cordillera Occidental rises on the west; to the east, the majestic peak of Illimani soars above the Cordillera Oriental. Fertile plains appear, surrounded by undulating hills; corn fields and *colonias* begin to dot the landscape; cattle, sheep, llamas and horses are numerous. Beyond lie the blue waters of Titicaca, between Bolivia and Peru, the largest lake of South America—12,500 feet above the sea. Flats, lagoons, beaches of grey sand, rush-bordered lowlands, shoals and islands spread upon the scene. Here are ruins of marvellously-constructed edifices and temples, mute evidences of prehistoric culture. The wind blows steadily from the east, bringing the flocks to a pleasant tarrying place of rest and food. Other shorebirds and countless waterfowl are gathered in the shallows. The town of Puno, situated on the western margin of the big upland basin, in the heart of the ancient empire of the Incas, is lazily busy

with its shipping and steamboat traffic. Across to the east, the triple-crested summit of Sorata rests among the clouds.

The halt is brief on the flat-lands of Titicaca ere the flocks trail eagerly upon the long return, now westerly toward the arid coastals of Peru. More stupendous rock masses intervene, more snow-capped peaks. For two hundred and fifty miles the Cordillera Occidental occupies a breadth of wild, chaotic country in its trend from north to south; but within the limits of a single flight, by the palm-fringed valleys of Arequipa and Tambo, past rich vineyards, olive groves, fields of cotton, Indian corn and sugar cane, the region of the Andes is left behind. On the south, the volcanic cone of Misti soars above the city of Arequipa for more than 20,000 feet. Sandy deserts appear; and, beyond these, the open vastnesses of the Pacific.

An uninterrupted way now leads the courageous minions of the air to the continental isthmus and the Gulf of Mexico, twenty-five hundred miles northwestward; and passing the Peruvian capital of Lima with its whitened towers, rounding Cape Blanco, giving wide berth to the mountains and forests of Ecuador and Columbia, and launching across the Bay of Guayaquil, the winging contingents traverse an ocean highway to the low-spread seaboard of Salvador, Guatemala and Southern Mexico. Panama, Costa Rica and Nicaragua lie off to the east. The Sierra Madre is negotiated; the level plains of Yucatan are visited briefly; and the Gulf of Mexico, seven hundred miles across, is spanned aslant the trades.

The wide delta of the Mississippi, the open plains of Texas, the bayous of Louisiana harbour a restless throng as the golden flocks sweep down. Myriads of feverish travellers, stirred by inexorable law, are preparing to move on; others are arriving; many have already left. Robins, bluebirds, meadowlarks, song-sparrows are far up country, carrying thrills of spring-time to the people of the north. Geese melt among the clouds. A great obsession, a rule of feathered life, an irresistible urge, borne in an ancient day by creative cause and origin, sweeps within its folds an illimitable organism of bird species. A



Golden plover on tundra.

Photo by A. A. Allen.

Four young golden plover.

Photo by P. A. Taverner.



ALONG THE AIRWAYS OF THE GOLDEN PLOVER

fundamental cry is in the air. Warblers, flycatchers, vireos, kinglets, cuckoos, wrens, kingfishers, doves, tanagers, bobolinks, nighthawks, swallows, thrushes, sparrows, goldfinches, owls, hawks, shorebirds, waders, plover, bitterns, ducks, herons, cranes, gulls, geese—waterbirds and landbirds—dressed in the utmost finery of their kind, advance cautiously but irresistibly toward their summer haunts.

Flocks bound to northern extremes move slowly. Far away, the winter wanes; bare spaces appear in melting fields and roadways. Still farther, the call has not yet sounded, and inherent instinct pauses. Loitering and feeding, the plover flocks await the final summons.

An army of feathered life has invested the environment of New Orleans, pressing forward as the prairie sloughs show green. Again the golden ranks are on the wing. April has come. Far up the flightway of the Mississippi, and spreading as they drift toward the north, the flocks work slowly.

The latitudes of St. Louis, Omaha, St. Paul and Winnipeg are reached. Earth patches widen; willows by soggy streams flaunt wooly tips; maples are reddening; wild crocuses scatter colour on the plains; frogs strum in the lowlands. At length, May sunshine comes and passes, ushering the last cautious migrants from the south. The prairies of Minnesota, Dakota and the Canadian West are strewn with birds—Spring is in full acclaim.

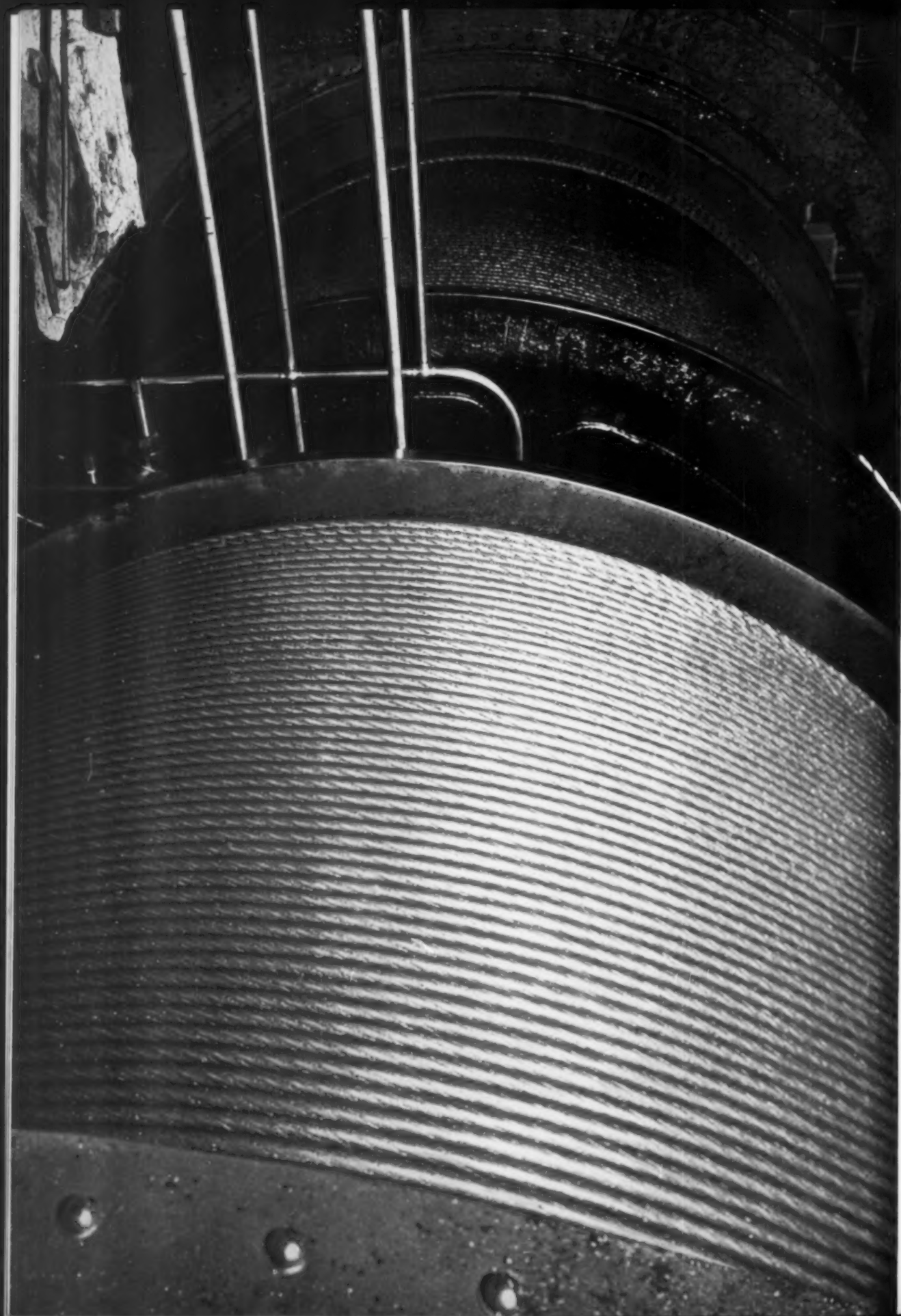
Again it is June! The long, dark winter of the farther north has passed; snow is receding from the Arctic tundras; increasing warmth bows to primordial promise. Longspurs and buntings twitter in the sunlight; geese pass and repass in their vast formations—brief Arctic Summer is at hand.

A golden plover searches the margins of a chill-swept pond; a plaintive call is answered from the upper air; and, stooping on curving wings, a mate comes down to fulfil an age-old mystery.



Golden plover and young on the tundra.

Photo by
P. A. Taverner,



THE STORY OF MCINTYRE

by N. IGNATIEFF

FROM Labrador to the Mackenzie River, from the Great Lakes and the St. Lawrence basin to Hudson Bay and the Arctic, stretches Canada's huge treasure house known as the pre-Cambrian or Canadian shield; a region which, we have come to realize, holds imprisoned in its ancient rocks inestimable wealth in the form of a great variety of minerals. But what an infinitesimal proportion of all that wealth lies within easy reach of the surface, or in readily recognizable outcroppings to attract the keen eye of the prospector stubbornly pursuing his search through the tangled maze of stream, lake, muskeg and forest which cover these riches. One is set wondering how much of this wealth will ever be discovered and wrested from the embrace of Mother Earth. Even when favourable areas are located, the geology is so complicated, the rocks so tortuously folded, broken and faulted, that it would seem almost impossible to locate rich ore bodies except by the merest chance.

Yet it is not entirely a game of chance. Courage, coupled with endless perseverance, imagination, scientific geology and research and yet more courage, is proving itself capable of solving the most baffling mysteries of treasure hunting in the bosom of the earth.

The story of McIntyre is fascinating for just this reason. It is not a story of chance and luck—a glamorous deposit of rich ore on the surface—the realization of a prospector's dream. It is a story of early disappointment, of bad luck, of innumerable difficulties transformed into extraordinary achievement through vision, courage, perseverance and brilliance of geological analysis. And just because the north country holds potentialities for the development of an infinitely larger number of McIntyres than those in the more fortunate classification of bonanzas which prove highly remunerative from the very start, this story of mining venture is all the more interesting.

The two original claims of 40 acres, which formed the nucleus of the future McIntyre mine, were staked by Sandy

McIntyre and Hans Buttner in the rush which followed the spectacular Hollinger find in 1910. Like most of the stakings around such a find the property was staked mainly in the hope that Hollinger ore-bodies would extend across the line into the McIntyre ground to which it was adjacent.

But misfortune seemed to dog the footsteps of the original prospectors. To a chance acquaintance in a Haileybury hotel, Sandy McIntyre, because he was very hard up, sold a quarter interest in the claims for \$300; a second quarter share is said to have been sold for \$25; but the remaining half interest changed hands soon after for \$55,000. The prospectors seemed well on the way to prosperity, and their first thoughts turned to their old homes. Taking \$5,000 each they crossed the ocean—McIntyre to Scotland and Buttner to Holland—only to discover on their return that the remainder of their stake had vanished, due to the dishonest manipulation of an associate.

McIntyre-Porcupine Mines, Ltd. was incorporated in March, 1911, with Albert Freeman as first president. There were 200,000 shares of \$5 par value issued and sold at a substantial discount mostly in New York and London. The showings down to the 300-foot level were most unpromising, and when a mill to handle 50 tons of ore per day was built, there was little prospect of it being possible to feed even such a small quantity of ore to the mill continuously.

Further development of the property needed more money. Indications had appeared that below the 300-foot level good ore might be encountered in volume. Some of the best veins were running out into adjacent properties, pointing to the wisdom of purchasing additional ground. Yet, because actual mining results had been so disappointing, it was extremely difficult to raise funds for such ambitious extension of holdings and development work. Yet, the management made the difficult decision, and largely due to the personal support of some of the directors the necessary extensions were made.

Left:—Drum of the main hoist at No. 11 shaft, for handling men to and from the various levels.

Nevertheless, a period of extreme financial difficulty followed throughout 1911 and for some years later. Creditors were pressing from all sides. At one point they were prepared to seize the plant in payment of debts; the doctor was being paid in company stock and the Temiskaming & Northern Ontario Railway refused to deliver a gallon of coal oil to the camp until payment was made in advance. While it was still hot, the first brick of gold, worth \$13,000, was rushed from the refinery to the bank to secure wages for the miners. The story is told that R. J. Ennis, a young man who came from Colorado to superintend the mill, avoided awkward discussions with prying creditors by staying in the mill or underground almost continually night and day. To-day, R. J. Ennis is the general-manager of one of the largest gold-producing mines in Canada, owning 680 acres in their Porcupine camp, employing on the average 1,300 men and producing gold to the value of \$8,190,000 in the year 1935-36, and a total of \$81,955,000 in the 24 years since work began on the property.

For years the uphill struggle continued, the outcome of which depended largely upon the successful solution by expert geologists of the mysterious problems which nature had created in this area with its rock formations. For McIntyre geology did not present a simple vein structure located in easily recognized rock associations. The ore occurred in groups of lenses, the general direction and location of which it was extremely difficult to discover. Much costly exploratory work had to be done, including diamond drilling and shaft-sinking, before any general theory with regard to the ore-bodies could be developed. Not till 1919 was a working hypothesis of the geological features of the mine formulated. And the accuracy and scientific penetration of the men responsible for it is proven by the fact that so far this hypothesis has been borne out by development work, and has therefore been accepted as substantially correct.

Roughly, the location of the ore-bodies at the McIntyre is controlled by several large bodies of porphyry, the largest of which underlies Pearl Lake and adjoins the ore-bearing schists, and dipping almost westerly at an angle of 55°. The veins occur in breaks, and are lenticular in shape and grouped en echelon. The two most favourable areas of schists are southwest

of the main Pearl Lake porphyry mass and below it, and northeast of this porphyry mass and above it.

Only when this general theory was formulated and late facts found to correspond with it did it become possible, with any degree of assurance, to outline ore reserves and look for veins without wasting time or money on a haphazard search for ore. Now it is possible to pick up the next succeeding lens of ore in a parallel break with considerable accuracy from the carefully detailed geological maps drawn up for the mine by development work and extensive diamond drilling. Crosscuts are not driven at regular intervals on the chance of hitting ore-bodies, but are taken directly into areas considered favourable on the basis of the geological theory.

Levels in the mine are at 100 feet intervals to the 1,000-foot level, thence at 125 feet to the 3,875-foot level, which is the maximum working depth of the main No. 11 shaft, sunk in 1924. Below this point the level interval is 150 feet, and operations are carried on through an internal, sub-level shaft which was started in 1933. This shaft No. 12, which will eventually reach down to the 7,000-foot level, is temporarily bottomed at the 5,500-foot level.

In this, as in several other instances, McIntyre has shown a bold initiative in setting the pace for mining development in the north country. It was the first mine in Northern Ontario to extract ore at such great depth.

To operate No. 12 shaft, huge rooms for hoisting machinery, transformers and switching equipment were cut out of the solid rock three-quarters of a mile underground. These excavations are immense, with walls and ceilings coated with gunite, a covered filler. Gunite is also applied to fill cracks and fissures in the walls and ceilings of all crosscuts and stations in the deeper workings of the mine to insure against scaling and caving.

While ground at the McIntyre is not weak, it does require extensive timbering in stopes unlike one or two mines in the North, where stopes resemble large caves without a single stick of supporting timber. All old stopes are back-filled. Waste rock was formerly used for this purpose. Now large quantities of gravel have to be brought in by aerial tramway.

All the ore mined between the 200 and 3,875-foot levels, which amounts to

about 2,500 tons per day, is passed through chutes into a main ore pass, and is conveyed through a preliminary crusher situated just below the 3,875-foot level to storage and loading pockets at the 4,050-foot level. This whole system holds about 12,000 tons of ore.

The 23 working levels consist of a total of over 80 miles of developed footage, about 46 per cent of the drifting being in ore, and although the mine has been in operation 24 years no level is yet completely developed.

The actual ore hoisted in the year 1935-36 was 876,698 tons, which assayed at \$10.00 per ton, with the gold price at \$35.00 per ounce. This was the highest volume of production in the history of the mine, and nothing reflects better the steady progress made by McIntyre than the fact that in every successive year since 1918 the production has exceeded the level achieved in the previous year.

The ore reserves, which are estimated from a knowledge of the ground developed and the extensive diamond drilling undertaken each year—100 miles in the mine's history—give every assurance of an optimistic outlook for the future. The engineers calculate these reserves at about 3,500,000 tons. Moreover, practically no development work has yet been done below the 4,000-foot level and geological considerations give every reason to believe that extensive mining may be carried to 7,000 feet and even lower.

The McIntyre ores present no metallurgical difficulties in the extraction of their gold content. The gold is associated with quartz and iron sulphides. The milling and extracting processes have undergone great improvement in the last 24 years and McIntyre has attempted not only to follow these developments but to set the pace.

The original 50-ton mill, designed and directed by Mr. R. J. Ennis, used the well-known amalgamation process. In 1913 this was replaced by a 150-ton cyanidation plant. Additional units were installed as the production increased, but by 1928 it had become apparent that the old plant was worn out and no longer adequate.

At this time the mill and the administration buildings were located on the Schumacher side of Pearl Lake, whereas the bulk of the mining was being done and the shafts located on the opposite side of the lake. Hence it was necessary to

convey the ore by aerial tramway a distance of about 1,500 feet. It was decided to install the new mill across the lake close to the new No. 11 shaft around which the mining operations were being centered.

Work on the new mill and administration building was started at the end of July, 1928, and metallurgical operations began here on May 27, 1931.

Much experimental work was done before the process and layout to be used in the mill were finally decided upon. In fact, a 150-ton pilot plant using the flotation process, which laboratory tests had indicated would be most suitable for McIntyre ores, was installed and operated for 12 months before the final decision was reached.

The new mill, designed to crush and float a minimum of 2,000 tons daily and to treat 400 tons of flotation concentrate by cyanidation, is one of the most modern and efficient plants in the Canadian mining industry. It is a building 244 feet by 176 feet constructed of steel and tile and is fire-resisting.

The general scheme of ore treatment consists of crushing the ore from the mine to about one inch in jaw and cone crushers. From there it goes to where it is reduced to about 3/16 of an inch and is further ground in tube mills in closed circuit with flotation cells and classifiers. The overflow from the classifier is floated with elimination of a finished tailing. Concentrate from the flotation cells is reground in cyanide solution in tube mills, operating in closed circuit with classifiers. The cyanide solution which contains the dissolved gold is known as the pregnant solution. Next comes agitation of the pulp and thickening of it, followed by three stages of filtering and washing. Final residue goes to waste. Precipitation of the pregnant solution is done by zinc dust. The raw precipitate contains on the average about 33 per cent gold, 19 per cent lead, 14 per cent zinc, 11 per cent copper and nearly 6 per cent silver. It goes to the refinery where it is acid-treated, weighed, fluxed, melted and refined. The bullion which is thus produced contains 84.10 per cent of gold, 11.96 per cent silver, 3.34 per cent copper and traces of lead, zinc and iron. In the shape of a brick weighing about 40 pounds, it is then shipped to the Royal Mint at Ottawa.

Not the least interesting feature of the new plant is its provision of modern

changing and washing accommodation for the miners, unique in the north country. Instead of the usual walk from the shaft-house to the changing rooms in the open with wet clothes and in a perspiring condition, which, involves dangerous exposure in sub-zero weather, the McIntyre miner is provided with a direct tunnel from No. 11 shaft, up which all the miners come, to the modern changing room. In the mine-clothes room the men must leave all their working clothes. These are placed on hangers and hoisted to the ceiling where they are dried ready for the next shift. From this room the miner, in order to get to his town clothes, must pass through shower bath chambers where a fine spray of hot water issues continuously in jets, not from the ceiling, but from the walls of a 5-foot passage. As one moves along this passage the temperature of the water

is gradually reduced until one ends with a dash of cold water. From the shower rooms the miners pass along a travelling platform through a Burdick solarium for ultra-violet ray treatment. Here in 45 seconds they receive the equivalent of 3 hours of sunshine.

On Saturdays the school children of Schumacher are allowed to go through these shower chambers and take the ultra-violet ray treatment. So popular has this become that one form of punishment is to deny this Saturday visit to the mine.

This whole layout shows that the management is animated not only by considerations of efficiency, but an excellent sense of social responsibility, which is further indicated by all manner of provisions for safety and health both in the mine and in the mill. Group life insurance is carried by the company for all employees. The policies issued on the completion of 3 months' employment for \$500 each are increased by \$100 per year to a maximum of \$1,500. Complete permanent disability and death coverage are provided.

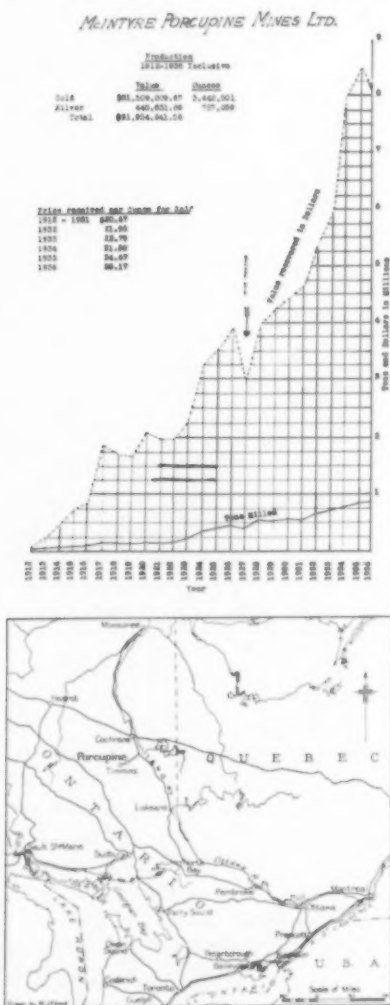
The standard wages for underground work are \$4.64 and \$5.20 for an 8-hour day. But most of the underground work is done on contract with the standard wages guaranteed. Contract men are able to make about \$1.50 per shift on an average in addition to their wages.

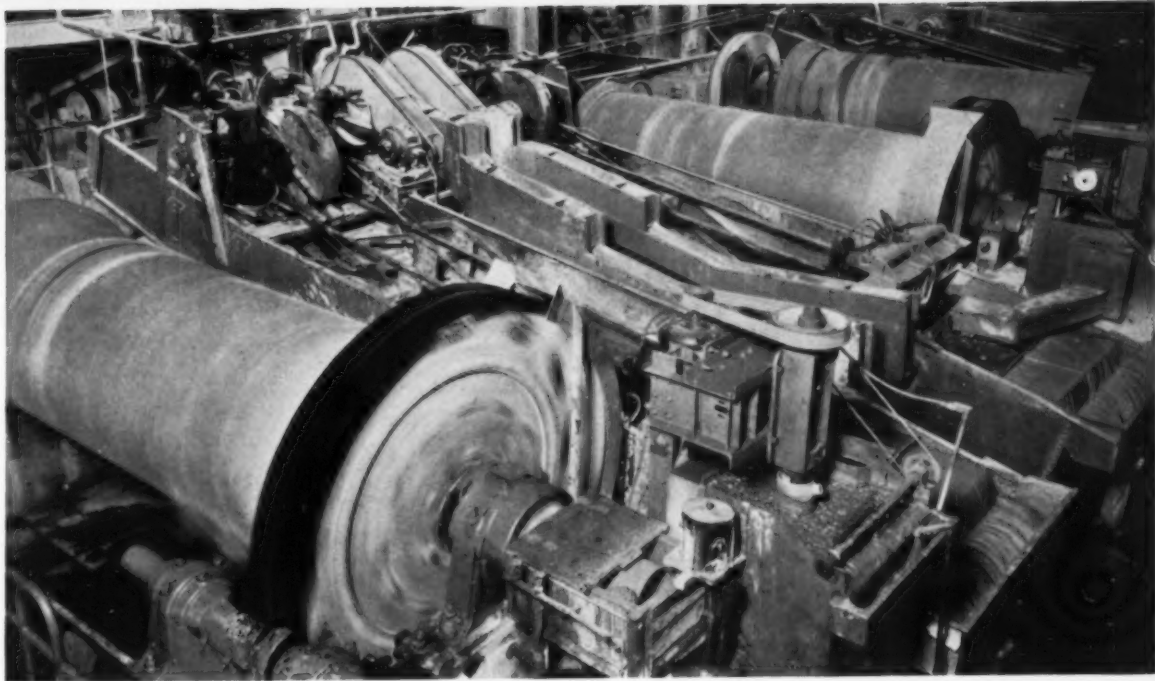
There is an active athletic association among the employees of the mine and last year, with some assistance from the company, it built fine athletic grounds with bleachers and grandstand on the tailings which filled in part of Pearl Lake.

There is no company town in conjunction with the McIntyre mine, the men living in the towns of Schumacher or Timmins.

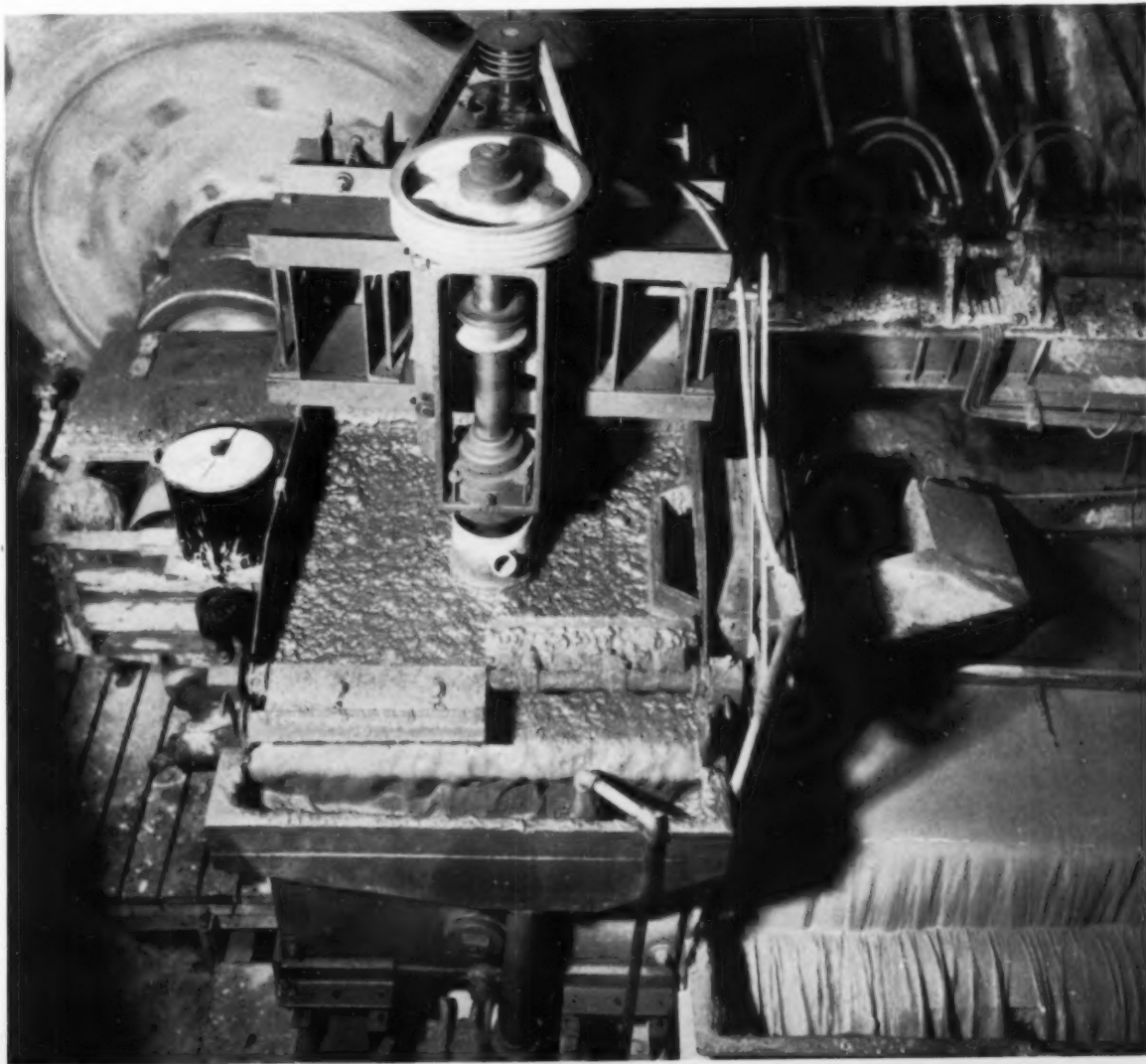
Since 1917, the President of the Company has been J. P. Bickell, who sold his 68 acres under Pearl Lake to McIntyre in 1912.

Like most large operating mines in Canada, McIntyre is always on the lookout for new finds throughout the north country. Every summer it has parties of prospectors and examining engineers looking over favourable ground or studying claims offered for sale. But how many of them will ever prove themselves another McIntyre? One might note that of the 57 properties sampled and reported on last year, favourable recommendations were made only on six, and only one was considered worth holding under option.

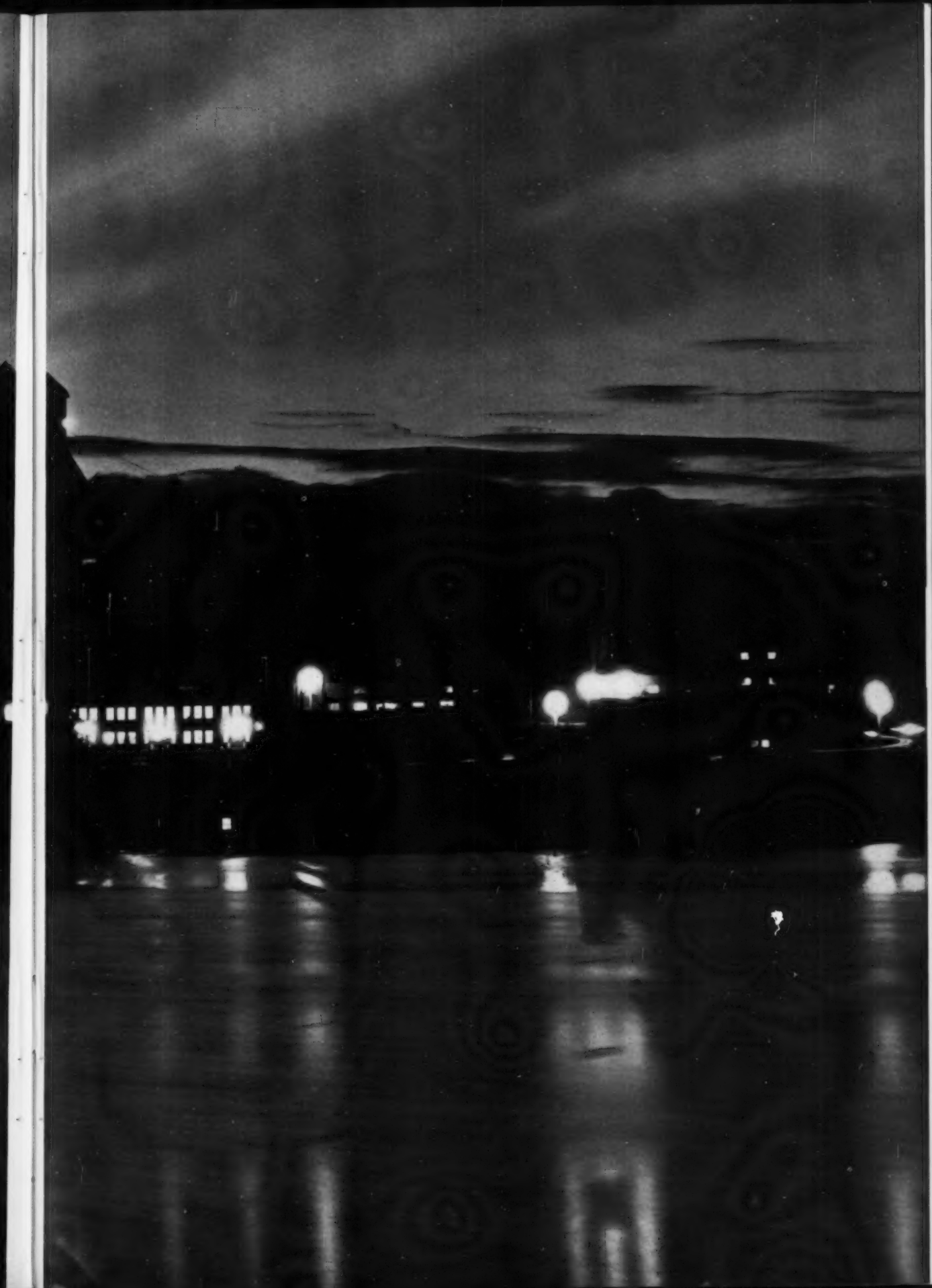




The tube mill floor showing 5 tube mills each 5 X 16 feet. Each mill is loaded with 20 tons of 2-inch forged steel balls, the total capacity of the mills being 2,100 tons daily. Here the ore is ground to pass through a 65 mesh screen. In the right foreground may be seen the flotation machine which recovers the gold bearing concentrates, the barren material being sent to waste. The concentrates from the flotation machine are reground in a cyanide solution in tube mills in closed circuit with classifiers to dissolve the gold. Above is shown a bowl classifier.









Compressed air and water sprays are used in underground stopes to keep down the dust. This, coupled with forced ventilation has done much to improve the healthful working conditions of the miner.

Men going on shift at the No. 11 shaft. This shaft handles men and materials to and from 33 different levels. The double deck mine cage is 16 feet high and carries 60 men.

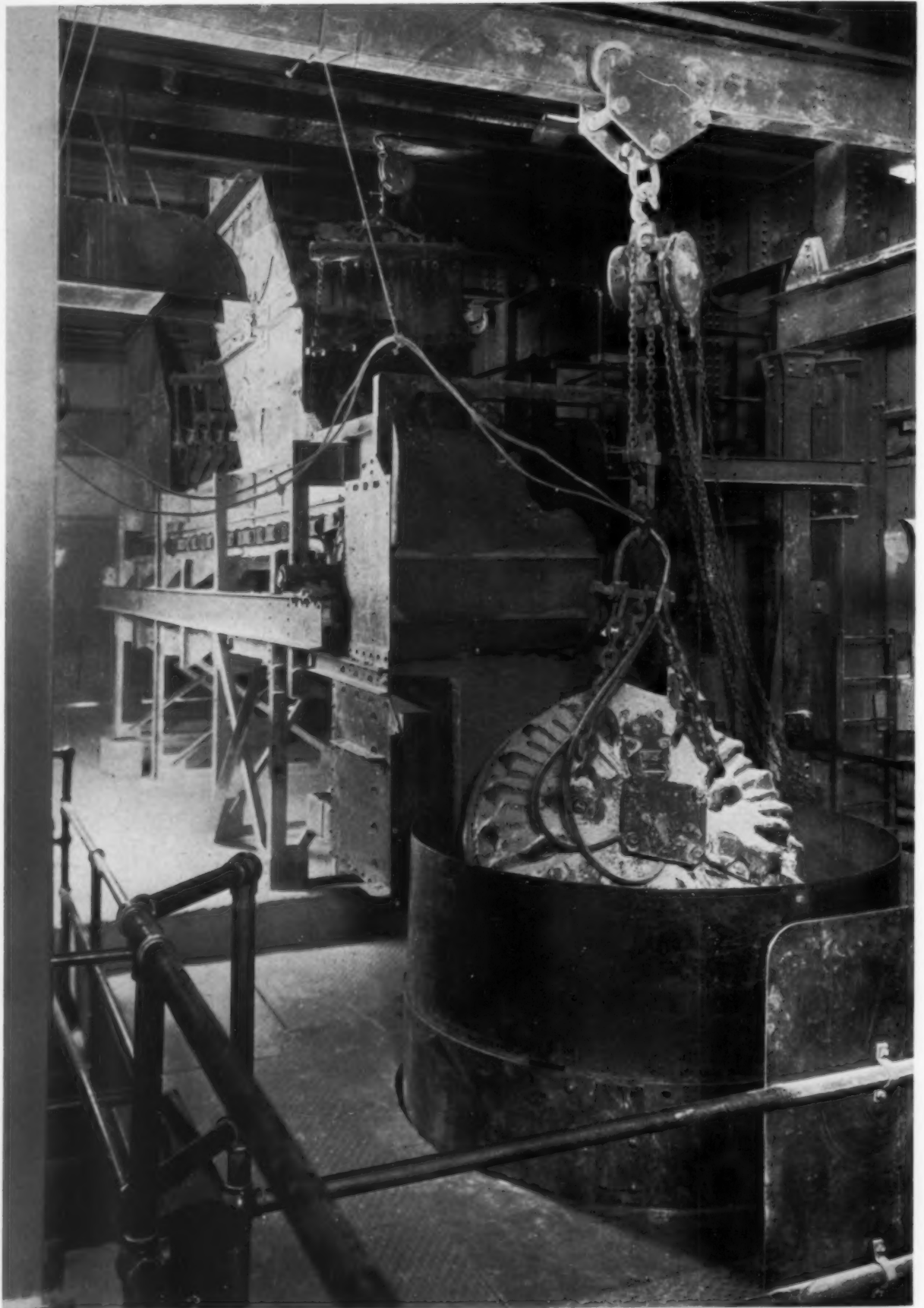




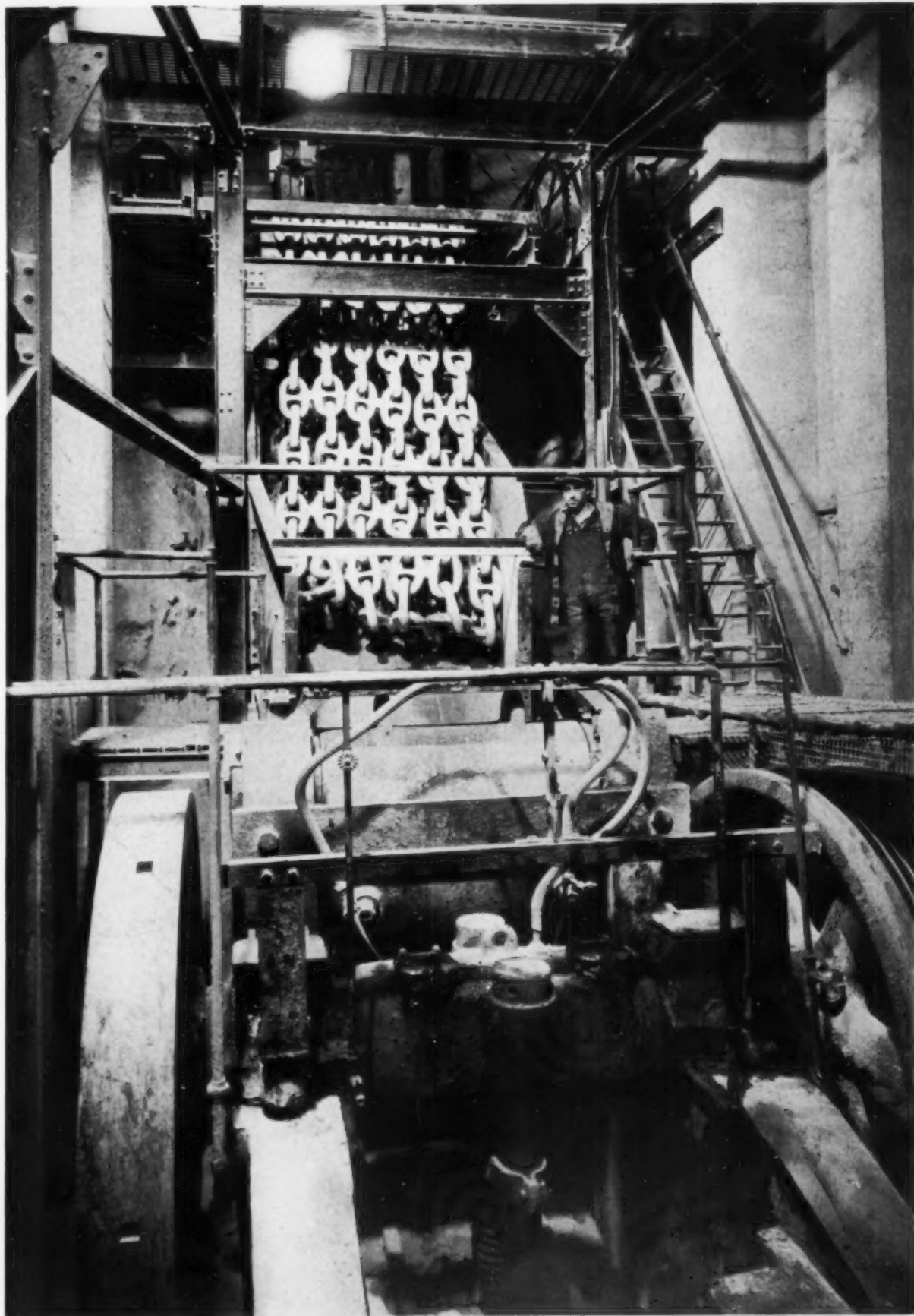
Building a hoist room three-quarters of a mile underground. This room will supply the needs of the new No. 12 shaft which will be sunk to 7,000 feet.

A square-set timbered stope showing method of placing the timber. Every year millions of feet of timber are used underground in our Canadian mines thus providing a market and employment for the Canadian lumberman. To prevent rot and destruction by fungus and as a means of fire protection, the timber is treated with zinc chloride.





From the rolls the ore, which has now been reduced to $\frac{3}{16}$ of an inch, begins its journey to the tube mills to be ground still finer.



Feeder to the jaw crusher. This feeder controls the entire ore output from the storage bins of the mine to the crusher, which has a capacity of more than 2,000 tons daily. The chain weighs 11,100 pounds.





ESKIMO EXODUS

by THOMAS WAYLING

DUNDAS Harbour on Devon Island has been abandoned! On a dull day last September the Eskimos folded up their bags and baggage, skins and skinnage, took down their tupeks and embarked on the icebreaker Nascopie of the Hudson's Bay Company.

Fifty-two natives, one hundred and eighty-two dogs, three polar bears, half-a-dozen whaleboats, and a score of squalling pups were crowded on the foredeck and the forward holds.

The Company's officials and its stores at Dundas Harbour were taken aboard and the ship sailed southward, leaving Devon Island to the muskox, the polar bear and a few scattered white fox.

It was because there were only a few white fox that the Island was being abandoned.

A few years ago Devon Island had been settled—a handful of people on a million-acre island—by natives drawn from Cape Dorset and other places on Hudson Bay.

That migration was part of the trend of Eskimo nomadism of recent years. Wise old hunters were saying to the young hunters: "Go North, Young Man." The advice was due to the necessity for the Eskimo to follow his food. With a staple diet of seal meat, and with sealskins for his clothing, the Eskimo must needs follow the seal.

Newfoundland sealers have been creating havoc among the Atlantic hair seals, and the seal herds are steadily moving to more remote waters in the Arctic.

As the Nascopie steamed down Admiralty Inlet with her Eskimo exodus, she ran into far-stretched icefields, great floes and pans extending clear across the inlet. As the ship approached, the white ice could be seen all spotted and sprinkled with tiny black dots—the biggest herd of seal seen in those seas for many years.

The seal had called the Eskimo north from the Hudson Bay littoral; had called him as far north as Devon Island.

The scientists brave rough seas to land at Craig Harbour, taking off from the lea of the ship, their instruments and the mail sheltered under canvas.

To-day's Eskimo does not live by seal alone, and while the Eskimo settlement at Dundas Harbour fared well for food and clothing it found the export trade sadly depressed. His staple of trade is the white fox. A few polar bear skins, some whale hide, carved walrus ivory, some seal and whale oil; these are the things he can sell south, but the white fox is the only commodity for which he gets good returns.

When white foxes are plentiful and prices high, the Eskimo is prosperous. When "Reynard" disappears and prices are low, hard times hover over the tupik and the igloo.

The Eskimo went north to Dundas primarily because of the seal. When he found there were very few white fox he turned south again, but not too far south. The Government and the Company agreed that the Eskimo should be evacuated from Dundas Harbour. The natives were consulted as to a new promised land, and decided on Arctic Bay. The seals were plentiful there, and white fox might be plentiful.

So they were landed at Tukik, on Arctic Bay, and a new post was built for the Hudson's Bay Company traders. This winter the Eskimo from the north side of Hudson Bay will hunt their seal and trap their white fox on the north end of Baffin Island.

The white fox scarcity, however, is not confined to Devon Island. The officers of the 1936 Arctic patrol found the condition general throughout the Arctic; the white fox were at the bottom of the cycle of plenitude and scarcity. The fox fur catch this year is only one-half the normal catch; and the Eskimo has hit a depression.

In the north it never snows but there's a blizzard. Not only are white foxes hard to come by, but prices are low. The sex which put the ostrich feather industry out of business and washed out the whale-bone industry has dubbed white fox a summer fur, the demand having dropped and prices depreciated. Perhaps, now that white fox are becoming scarce, the fickle sex may demand white fox, and good times may come again to the Arctic islands as the supply cycle moves up and prices rise.

The white fox will always remain a creature of the wild. Other foxes are being raised on fur farms and the pelts are rapidly replacing the wild variety. This cannot be done with the white fox, which is a creature of ice and snow and sub-zero temperatures. Experiments have been made even in the Arctic to raise the white fox on farms, but all attempts have failed. The ground in the Arctic is perpetually frozen, and there is no drainage from confined spaces. The white fox must have space and freedom.

Food for the white fox is the little Arctic lemming. For some unknown reason, lemming were scarce a year or so ago; and the white fox went hungry and did not multiply.

Thus back of the depression which has struck the Arctic is Mickey Mouse's little cousin. Strange tales are told of the lemming. The little Arctic mouse has been seen on the sea ice out from Ellesmere Island, hundreds of miles out; his tracks have been found in foodless places.

At times the lemming multiply and increase alarmingly and the white fox flourish; but with lemming scarce the white fox is in a bad way.

Officers of the Bureau of Northwest Territories, Department of Mines and Resources, governors of the Eskimo, want to know why the lemming died off?

Word was broadcast last winter to the Royal Canadian Mounted Police posts in the Arctic. The officers at Lake Harbour went out and captured two lemming; (the R.C.M.P. always get their mice and men). They named the lemming Hortense and Maria—for no good reason; they just needed names and Hortense and Maria came to mind.

At Lake Harbour the mice were taken abroad the Nascopie, to be brought down to Montreal, so the biologists, parasitologists and other scientists could ascertain what ailed them.

Alas for science! Hortense died, and Maria escaped to a brief freedom; how brief that freedom only the ship's cat can tell.

From Chesterfield Inlet to Port Burwell, from Port Harrison to Craig Harbour, the story was the same; the white fox is



Two small boys at Pangnirtung wrestle valiantly with a keg. They've got it up the slope, but it threatens to role back. Two ko-mik clad feet are thrust below to hold it.

scarce and hard to find, the Eskimo export trade is in a bad slump.

The Eskimo's domestic economy is not in such a bad way. Canada is not repeating the blunder of the Indian; she is letting the Eskimo live his own life.

Guardianship and wardship, treaty money and wooden houses have ruined the health of the Indian and pauperized him. Independence, watchful aid and freedom are enabling the Eskimo to develop and increase; still a primitive, but a good primitive.

Thirty years ago, Eskimo followed Dr. Charles Camsell and his associates down the Coppermine River, watching for a chance to kill. To-day the Eskimo is the friendliest aborigine on the map. Few races have made the swift advance from bow and arrow to rifle; from the skin boat to the motorboat, as have the Eskimo.

Wise administration and careful forethought have quite evidently put the Eskimo into a steadily sounder position economically. When the 1936 patrol of government officials and scientists went north on the Nascopie, careful enquiry was made into the economic and physical welfare of the natives. Major D. L. McKeand made check of the economic position and Inspector Keith Duncan, of the R.C.M.P., received full reports from the R.C.M.P. detachments.

At Cape Dorset the natives were found to have made great progress in the art of carving walrus ivory. This was true in lesser degree throughout the Arctic. This native industry, however, is not encouraged by the traders. When an Eskimo is carving a walrus tusk into a cribbage board or a model kayak, he is not hunting. Anything which takes him from the hunt is frowned upon. The walrus ivory carvers have only their native talent, but it is amazing. At Pangnirtung, Dr. A. G. MacKinnon's Eskimo carved an ivory fist that was sheer sculpture.

An Eskimo borrowed a pocket-knife from a trader. A few days later he returned it with an exact replica of the knife made of walrus ivory, so accurate that the blades had a spring like the real knife. The walrus ivory carvings are legion. The Eskimo takes the familiar

things, such as the whaleboat, the motorboat, the kayak, the igloo, and reproduces them in walrus ivory. He takes the polar bear and the seal, the white whale and the narwhal, the caribou and the muskox, and carves the little miniatures with amazing fidelity. His neighbours, his wife and children, his sled dogs are also carved in ivory; tiny figures that are very true to life. Walrus ivory has no grain, unlike elephant ivory, but it takes on a fine polish, almost a patina.

All these articles are good to look at; yet the Company reports very little demand outside. Ivory carvings are done so well and cheaply by the Japanese that the Eskimo cannot compete. Once more competition and lack of demand have depressed the prices of Eskimo commodities.

The Right-whale and the Sperm-whale have been long gone from Arctic seas, though there is word that they are coming back again. The white whale is plentiful, and with his modern equipment, the Eskimo can supply any demand for whale oil or whale hide.

The same is true of walrus. There is a good supply of walrus hide, but a low market. Seal are plentiful, but the eastern seal is a hair seal and not the fur seal of commerce. In the hair seal industry the Newfoundland sealers have put the Eskimo out of the competitive class.

Following the course of industry, the drop in the level of Eskimo commodity prices has been followed by a retrenchment in the manner of his operations. When times were prosperous and prices high the Eskimo had a good export trade and his imports increased. He was able to buy rifles and ammunition and motor boats, caribou skins for his winter garb and duffle for the summer. His wife could buy dresses and woolies for the children. She could buy a Primus stove and oil for it. These were luxuries a thriving export trade made possible. There was even a gramophone or concertina.

With the falling off of Arctic exports, the imports have dropped. The Eskimo families are back to sealskin for clothes and sackcloth for tents. The koodlik is back in the tupek and the igloo—the seal oil lamp has replaced the Primus.



Arctic smiles. The native women at Pangnirtung think film tests are funny, the children are not so sure, but the baby is definitely unconcerned with the whole performance.



The R.C.M.P. officers at Craig Harbour, Corporal Hamilton and Constable McWhirter, in dark blue, with their two natives, in white, take off Inspector Duncan as the Nascope arrives at this most northerly post in the Arctic.

The motor boat is giving way to the whaleboat. The Company is discouraging the use of the motor boat and its expensive gasoline. The Eskimo is being persuaded to go back into sail; (and when the wind drops the Eskimo's wife goes back to the oars.)

Fortunately for himself the Eskimo's depression has hit him while he is still within memory of his ancient weapons. He can, without much effort, lay aside his rifle and take up his harpoon. He can still use the bird dart and the fish spear. Instead of putting the Eskimo on relief it has stirred him to a greater measure of self-help. He has not been pauperized, but he'd like to be. Who wouldn't if there was a handout to be had and no need to face the storm and hunt for food.

Many families had to be helped last winter by the R.C.M.P., the medical officers and the Company, but scarcity of game was responsible. Out from Pangnirtung an Eskimo encampment fought starvation for three months. They ate the dogs and everything remotely edible. They were at their last gasp when a hunter, after three days and three nights at a seal hole, harpooned a seal and fed the camp.

The Eskimo is forever a nomad. When starvation threatens he may be miles away from the nearest R.C.M.P. detachment or a Company post. Therein lies his danger.

The R.C.M.P. detachments last winter performed patrols throughout the Arctic. The basis of the patrol is the possibility of an Eskimo encampment being in need. From Pangnirtung the R.C.M.P., travel northward towards Pond Inlet, whence a patrol is made towards Pangnirtung. The patrols do not meet, for there are no means of communication, but they cover

pretty thoroughly the places where the Eskimo wander. Another is made from Lake Harbour north toward Pangnirtung, a watch always being for word of an Eskimo in need. The patrols travel as light as possible, but there is always a handout of biscuits and tea and a little ammunition where needed.

The medical officers also make long patrols. Dr. Livingstone, last winter, patrolled out from Chesterfield, Dr. MacKinnon from Pangnirtung. The Eskimo have state medical service, such as the rest of the country covets; medical inspection without cost, medical attention without charge, medicines without payment.

The Eskimo are cheerful, happy and contented. They don't even worry about the advent of Social Credit; they've had it for several hundred years. They have no fear of Communism; they've practiced it for time beyond computation.

There is no money in the Arctic. The Eskimo takes his furs to the trading company and barter them for the things he needs. His credit with the company is based upon the resources of the country and his ability to develop them; on the white fox and the walrus and the seal—that's Social Credit.

When it comes to Communism; the Eskimos share all they have and always have. In a community short of food, what food there is becomes community food; to be shared by all.

The little brown man is moving north as the white man comes in from the South. As long as the seal and the walrus and the whale, the white fox and the lemming move north too, Canada's Arctic citizenry will grow in strength and numbers.

But, ladies, if you'd help him, make white fox fur fashionable again!



The whaleboat has replaced the umiak. When there are winds, the Eskimo raises the sails. When the wind dies, the women row.

The kayak remains the Eskimo hunter's craft. At Cape Dorset the kayakers follow the ship to anchorage.



Everybody helps unload when the annual supplies come in. The children at Pond Inlet help bring the canned goods to the store.



Coal and general cargo are landed from the Nascopie on the rocky shore at Pangnirtung.



Native families are landed at Arctic Bay after having been transported from Dundas Harbour.



*The good hunter has a fine white tent,
and a Primus oil stove. The poor widow,
next door, has but a tent of ragged old
coal sacks.*

*The lemming, pugnacious little mouse
of the Arctic. When lemming are scarce
the white fox goes foodless.*

The chief export commodity of the Eskimo is white fox, which cannot be raised in captivity and comes only from the Arctic.

One native family inhabits the point at Tukik on Arctic Bay. The weather is cold but the baby in the hood wears nothing but a small shirt. A scrap of polar bear skin dries on top of the skin tupek.





THE COLONY OF THE BAHAMAS

by GEORGE KINNEARD

COMMENTING on the statement that one half the world doesn't know how the other half lives, a colonial governor said recently that one half the British Empire doesn't know where the other half is!

The Bahamas, the most northerly of the British West Indian colonies, are a chain of coral islands extending in a southeasterly direction from the coast of Florida for a distance of some 500 miles. They are composed of about 20 inhabited islands and an immense number of islets and rocks. The principal islands are New Providence, containing the capital, Nassau, Abaco, Harbour Island, Eleuthera, Cat Island, Inagua, Ragged Island, Rum Cay, Exuma, Long Island, Long Cay, the Biminis, San Salvador, Grand Bahama, Crooked Island, Berry Islands and Andros. The total area is 4403 square miles, or about twice the size of Prince Edward Island.

The Caribs, who were inhabiting the islands when they were discovered in 1492, were carried off a few years later by the Spaniards to work in the mines of Cuba. The Spaniards never appear to have settled the islands but they were well known to the inhabitants of the Bermudas and the Carolinas early in the 17th century.

The Bahamas were included in a grant to Sir Robert Heath, Attorney-General of England, in 1629, and in 1647 the Company of Eleutheran Adventurers was formed in London for the purpose of making an organized attempt at colonization. Notwithstanding the Royal Grant to Heath, Charles II in 1670 granted the islands to six of the Lords Proprietors of Carolina. These men proceeded to set up a regular system of government under a Governor and a Parliament, the lower House of which was elective. Between 1671 and 1715 thirteen Proprietary Governors were appointed.

As a result of piracy in the islands, the Crown resumed the civil and military government in 1717, and since that date

there has been a continuous line of Royal Governors. The islands were surrendered to an American fleet in 1776 and again to the Spaniards in 1781, but they were retaken by Colonel Deveaux before the Treaty of Versailles, in 1783, when the British possession was confirmed. The Colony has remained a part of the Empire since that date.

Nassau, named after William III, was established about 1695 in the little island of New Providence, and has been the Colony's centre of gravity ever since. Why it was originally chosen as the capital is not very clear, but certainly it served as a base from which the Spanish fleet could be attacked. Surrounded as it is on all sides by dangerous waters, it must have afforded a safe retreat.

The Spaniards recognized the threat which it offered to their trade, and they are said to have plundered the place more than thirty times. As a result of this, for a long time the principal concern of the colonial governors was the defense of the town. To this end one fort after another was built, culminating in the construction of fortifications at each end of the harbour. All trace of the earlier forts has disappeared, but some of the later ones, particularly Fort Charlotte, remain in an excellent state of preservation and give the visitor a wonderful idea of how our forefathers defended themselves in the eighteenth century.

Lord Dunmore, in a description of Fort Charlotte sent to the Secretary of State in 1788, expressed the hope that it would be found "as difficult of access as most regular ones that were ever constructed, and in general is built of such materials that if not destroyed by the enemy will last without any repair for a great number of years, I mean that part which is constructed of cedar, the other is entirely cut out of rock." He goes on to say that "there are two magazines that contain above a thousand barrels of powder and there are two others either

Left: Typical street scene, but the donkey is not always stubborn.

for fixed ammunition or for casemates for the troops, these are all cut out of the solid rock, under the works perfectly proof against shells, and under one of the Marlins there is a well that will amply supply the garrison with water, and the other part of the works is totally cut out of the rock without one morsel of wood belonging to it, and must last to eternity without wilfully destroyed, at great expense and trouble. It cost £4,000. This work will require forty-two guns and will perfectly defend the harbour and entrance into its west end."

From serving as a naval base against Spain, Nassau gradually degenerated into a "neste for pyrates," so that in 1718 George I sent out Captain Woodes Rodgers with 100 men to reduce the Colony to a state of order. All governors are enterprising, but this man, having been received by over a thousand pirates with full military honours due his distinguished office, promptly proceeded to hang eight of them by way of encouraging the allegiance to His Majesty of the remainder. From this date on, to quote from the seal of the Colony: *Expulsi pirati restituta commercia*. Nassau is today a modern city with safe water, refrigeration, a sewage system and the facilities that make our present-day civilization possible.

The population is made up of two components — a white and a coloured. The white element is derived almost entirely from the British Isles. Some came direct, some by way of the American continent, a large influx of United Empire Loyalists arriving in 1783. The coloured element is, of course, a legacy of the slave trade. There has been some statistical reticence about the distribution of the population as to colour, but as a matter of fact the native white group is relatively much larger than in any other of the British colonies in the Caribbean.

Descended from men who gained a living through privateering, buccaneering, blockade-breaking and gun-running, "Conchey Joe," as he is familiarly called, is a stout fellow. It is only natural that he should be self-reliant and feel capable of "paddling his own canoe." Nor is it surprising that the present-day Bahamian, who through his own initiative and native

ability has acquired a competence, is apt to have a point of view rather disconcerting to the complacent superiority of the "outsider."

As for the coloured countrymen of the "Conch," Major H. M. Bell, in his book, "Bahamas — Isles of June," gives a good description of their domestic arrangements: "I peeked into a cottage. It had a board floor, two beds with snowy white sheets made of material labelled faintly 'Canada Flour.' There was a mirror, a table with enamelled plates on it, a picture of Queen Victoria giving a Bible to some presumably heathen people, a few empty bottles on a shelf, and with them cups and saucers. The family provender hung at the back door — dry or drying fish and conch meat. The oven was cold but there was bread on a shelf behind a bit of highly coloured curtain. The windows had curtains of a flowered fabric much affected in an alien northern place called Greenwich Village, and there known as 'cottage cretonne.' On the wall was a text stating 'Jesus loves us.' So were piety and domesticity commingled. In and out of this residence wandered a goat that paid little heed to humans. Chased away when he was about to snatch a tasty titbit from the bossman's spare pants, he scrambled nimbly over a wall, scattering chickens, and himself bleating in protest."

Never a farming people, the coloured Bahamians have devoted themselves to the land only when nothing more profitable offered. Perhaps unconsciously they appreciated the fact that their islands were not adapted to commercial agriculture. True, almost anything could be produced, but they never seem to have had a reliable money crop in normal times. But sea-farming paid and still pays. The sponge industry has existed for over a century and affords a living, directly or indirectly, to some 10,000 people. In some years it has brought in a revenue of £200,000 and required 3,000 boats ranging from schooners to open sailers.

The sponges are secured off the bottom by means of a hook attached to a long pole. It is an arduous business. Sponge-fishing grounds exist off the islands of Abaco, Exuma and Acklins, but the principal one is "The Mud" — a large

shallow area lying off the coast of Andros — an island even today not fully explored.

The "sponger," having fitted out in Nassau, makes the long voyage to the fishing grounds and subsequently spends weeks and perhaps months of laborious work, poking and scrabbling about the bottom until a cargo is secured. It is a striking sight to see these sponging schooners standing up into the wind — off for the Mud — with their string of dinghys trailing behind like the tail of a kite, but a slave galley must have seemed a cabin cruiser, compared to them for comfort. A few days aboard and one could really appreciate the experiences of the Ancient Mariner in tropical waters.

Now that the Canadian National Steamships ply regularly between Canada and Nassau, an increasing number of Canadians visit the islands and some are building winter homes here. Every year thousands of tourists spend a few days or a few hours in port, and it is an interesting fact that the first cruise ship to visit the Bahamas was the *Santa Maria*, commanded by one, Christopher Columbus. He landed on the island to which he gave the name San Salvador and here was heard the first Mass known to the western world. Medical readers may recall one of the souvenirs he is said to have brought back to Europe as the result of his trip.

The landfall of Columbus is marked by a monument of native limestone, and was erected, oddly enough, by the *Chicago Herald* in 1891 in celebration of the four hundredth anniversary of the voyage of the *Discovery*. This vessel had once moored in Riding Rock Bay, about five miles off.

Apart from their historical interest, their incomparable seascapes and their wonderful beaches, the Isles of June offer the visitor above all else, an absolutely unbeatable brand of weather; weather such as the Saints surely order in Heaven. It is impossible to exaggerate. The mean temperature for the past five years, early morning and afternoon, varied from 74.5 to 80 degrees.

One matchless day follows another, and as for the Bahamian nights, it is here that the heavens really declare the glory of God.



Drawn by W.J. Flood

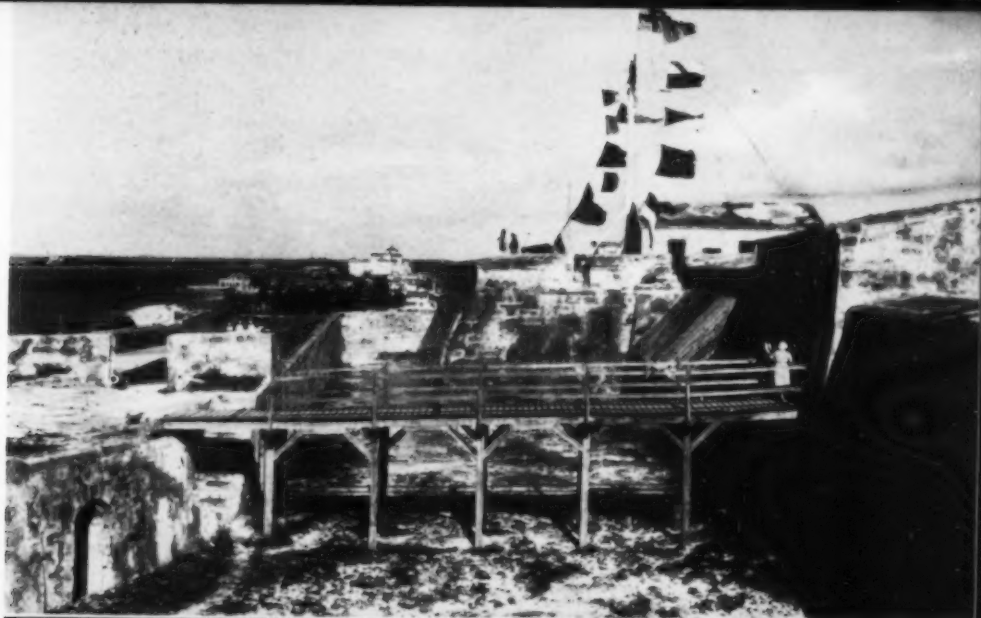


Sponging "on the Mud". Examining the bottom through a glass-bottomed pail.

Spongers "fitting out" in Nassau.

The coconut likes to have its roots in sea-water.





*Fort Charlotte, view
of the moat.*



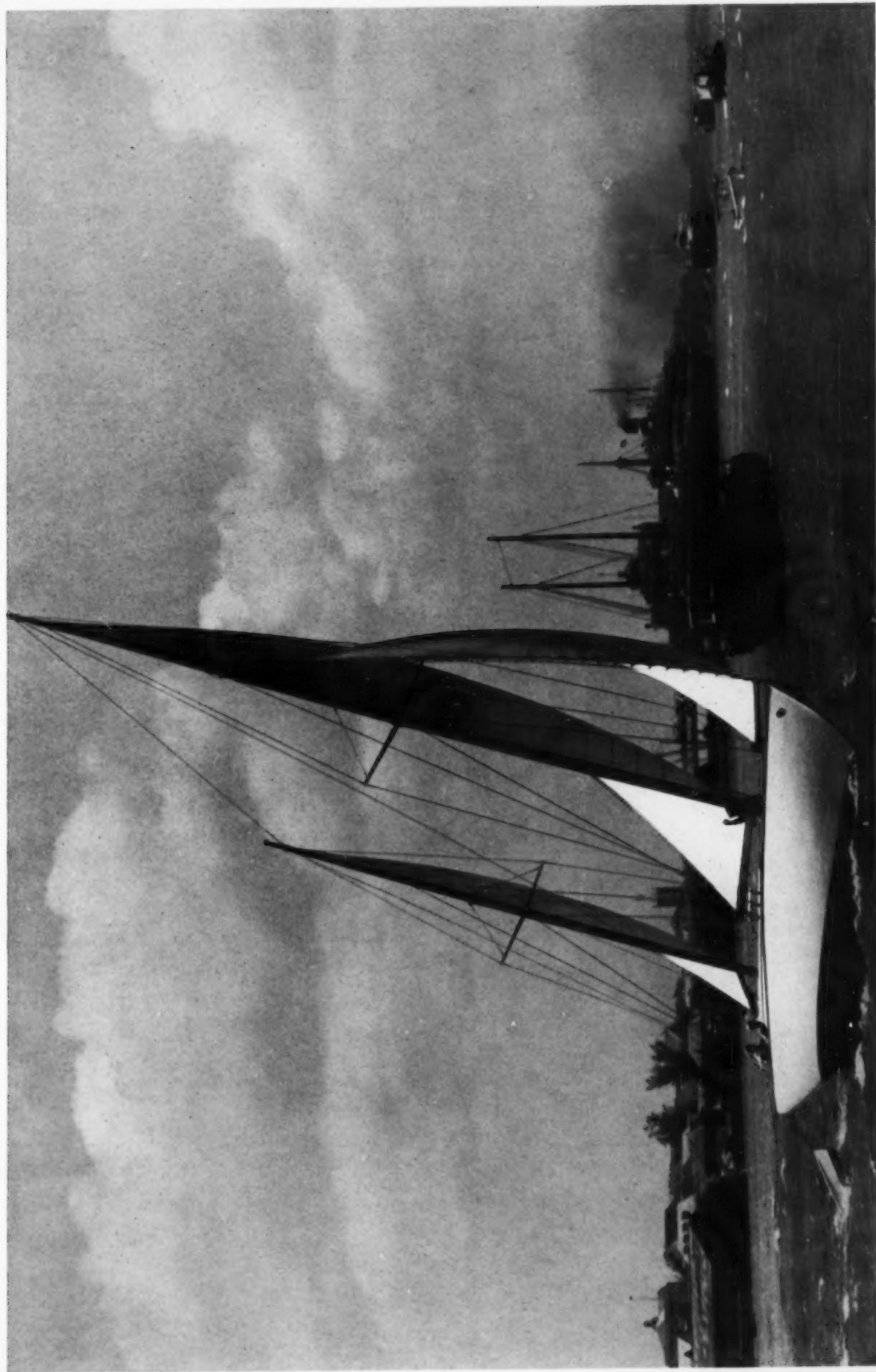
*Fort Fincastle, a
small fort used to
protect the harbour
entrance at Nassau,
now used as a
signalling station.*



*Ancient foreground
with modern back-
ground. Fort
Charlotte.*



Entrance to the Harbour at Nassau.



Staunch of timber and sweet of line, locally built ketch used by the Bishop of Nassau in visiting the various islands in his see.



Fig. 1. Landscape in the vicinity of Maple, Ontario, on Ilford infra-red plate.
(Maple 24-7-16 R 1 3.04 p. m. sixtus 1/75 Left of 200 Bass 13.5 cm f.22 1 sec. Ilf. I.R. plate filter.)



Fig. 2. Same landscape as in Fig. 1 on panchromatic plate.

Fig. 3. Landscape in the vicinity of Maple, Ontario, on Ilford infra-red plate.



Landscape Photography

by K. B. Jackson

It has been recklessly stated that the camera cannot lie; it would be more correct to say that the camera cannot but lie. The photographer, therefore, either as artist or scientist, must control his medium to re-create his impression or to reveal a fact. His picture will inevitably be in some sense false. His success will depend upon his choice of falsehood.

Impressions are intangible things and their content depends more on the experience of the observer than on the content of the observed, be it landscape, face, or microscope slide. This provides both the creator and the critic with the freedom they so much enjoy, but at the same time imposes upon the scientist and his interpreter the necessity of a mutual understanding.

Our sense of true rendering of landscape in black and white has been so badly warped by long exposure to the conventional photograph that we have come to accept it as correct, and our first reaction to other false renderings and even to colour is that they are "overdone". For example, at first sight might not Fig. 1 be entitled "Farm in Fairyland" and Fig. 2, "Ontario Landscape"? Obviously they are photographs of the same subject, taken a few minutes apart, the difference being in choice of plate and filter. But, on closer examination does not the former convey more of the crisp brilliance of a windy midsummer day, and is not the latter dull and drab in comparison?

For the present it is unnecessary to inquire why, in the infra-red photograph, the deciduous trees and crops are "too" light and the conifers, ploughed fields, shadows and blue sky, "too" dark. If the result conveys a better impression of the subject, surely it is the more suitable falsehood. But the critic still has his freedom.

The forester, geologist and aerial survey engineer welcomes this infra-red photography, not for its pictorial value, but because it provides a sharper differentiation of types and a clearer vision. It is necessary however, to make adjustments in the camera and in the processing of the film. One must avoid cloud shadows and perhaps re-learn some details in the interpretation of photographs if one wishes to obtain the results desirable.

The pictorialist, on the other hand, must deal with many moods, and mist and dust and atmosphere may serve him well, as in figure 6.



Fig. 4.

Figs. 4 and 5 are tele-photographs—the shore is two miles from the camera. Fig. 4 shows the delineation of forest types with panchromatic film and green filter.

Fig. 5 shows the characteristic difference between deciduous and coniferous trees, including even the dark cloud shadow, in the middle distance, with infra-red film and filter.

Fig. 5.

Ilford I.R. Filter 87 20 f/80





Fig. 6. "Lengthening Shadows."—The English Lake District, photographed on standard film without filter, in which the mist, accentuated by the ordinary technique, lends distance to the picture, and greatly assists in creating the required impression. This is the usual falsehood, which in this case is suitable.

EDITOR'S NOTE BOOK

Thomas Wayling, widely known newspaper man, traveller and lecturer, was born in Manchester, England, coming to Canada in 1907. His service in France during the Great War, the crossing of the Atlantic in the R-100, his flight down the Mackenzie to the Western Arctic, together with years of more prosaic travelling about Canada from one end to the other, have given him a wide and authentic knowledge of Canada and her people.

N. Ignatieff was born in Russia, a son of Count Paul Ignatieff, Minister in the Czarist Government during the world war. Educated at St. Paul's School, King's College and University of London, he came to Canada in 1924. A graduate in civil engineering, he spent some years in mining and construction work in northern Ontario and western Canada.

John Peter Turner of Ottawa, who has spent more than a quarter of a century on the prairies, is well known to the readers of the Journal, having contributed a number of articles dealing with the pioneer days of the Canadian West. Mr. Turner is now completing an authentic history of the transition period, from buffalo ponies to ploughshares, which will also embrace an intimate record of the early days of the North-West Mounted Police—now the Royal Canadian Mounted Police. Among his other hobbies, Mr. Turner is recognized as an authority on bird life, and his authentic account of the amazing annual flight of the Golden Plover should be of special interest to geographical readers.

George Kinneard who contributes the article on the Colony of the Bahamas in this issue is in H. M. Colonial Medical Service and at present attached as bacteriologist to the Bahamas General Hospital.

"Polar Agriculture" in the USSR

An article in Pravda for May 8th by Academician I. G. EICHFELD on "Polar Agriculture", reveals extremely interesting information regarding progress made during the last few years in the cultivation of the Far North. Although he gives no comparative figures to indicate the extent to which the areas sown to various crops have increased in the last two years, Academician Eichfeld refers to the acreage in the Far North as extending over "hundreds of

thousands of hectares", and suggests that a visit to the "Industry" Sovkhoz in the Murmansk region, and to the truck farm of the Baltic-White-Sea Combinat — hitherto the site of barren marshes—would make one realize the practical importance and significance which "polar agriculture" has assumed in the Soviet Union during the last few years. "We have ceased to wonder at the fact", he remarks, "that vegetables are successfully grown in the fields near Murmansk and in Igarka and in the remote Kolyma River basin."

Eichfeld describes the work of the Polar Division of the All-Union Plant Institute in the Khibin mountains, which he characterizes as the "northernmost outpost of agricultural science in the world". For five years, he writes (from 1923 to 1927), these agricultural scientists, himself included, confined themselves to exploratory work—finding out what crops could be cultivated in the Khibin mountains and by what means. Their experiments showed that under abundant fertilization a large variety of vegetables could be cultivated in the Murmansk region, including carrots, beets, cabbage, turnip, etc. — and with the following impressive yields: 110 quintals (a quintal is 220.46 lbs.) to the hectare for carrots; 483 quintals for "Copenhagen" cabbage; 805 quintals for "Swedish" turnips and 358 quintals for white Karelian turnips. Potato yields, he emphasizes, were particularly remarkable—"more than 300 quintals to the hectare". By 1932, he continues, many "agrotechnical" questions had been so thoroughly explored by the Polar Division of the All-Union Plant Institute in the Khibin mountains, that the scientists were able to proceed with plans to organize Soviet State farms (Sovkhozy) on the Kola Peninsula.

Eichfeld stressed the need for trained personnel necessary to carry on successfully cultivation of the Far North. Failure to develop agriculture in some regions of the Far North, he said, was due entirely to lack of trained personnel. He urged that agricultural technicums be established in the Murmansk region "for the north of the Leningrad District and the Northern Region, and in Igarka or in Krasnoyarsk for the northern regions of Eastern and Western Siberia".

Eichfeld reported that an agricultural technicum is scheduled to open this year in the new city of Magadan, on the coast of the Okhotsk Sea.

AMONGST THE NEW BOOKS

Canadian Frontiers of Settlement, Vol. IX

(THE MACMILLAN COMPANY OF CANADA, St. Martin's House, Toronto, Ontario. \$4.50.)

As a result of the depression, much has been written of the pioneer settlements of Canada, which have naturally suffered very severely on account of the economic dislocation accompanying these stringent times. The IXth volume of the Canadian Frontiers of Settlement, entitled "Settlement and the Forest and Mining Frontiers," by A. R. M. Lower and Harold A. Innis, is a further contribution to the subject of the inter-relation between pioneering and the forest and mining industries of Canada. The authors present a treatment of the geography of some of the frontiers of the pioneer life of Canada, and include considerable information regarding the policies of the Federal and of the various Provincial governments regarding frontier settlement, providing condensed information of the historical side of the subject.

The lumber, pulp and paper, and the mining industries have largely influenced the life of the pioneers at every point, and the development of the northern parts of the central provinces has been intimately associated with these industries.

Land classification is strongly stressed in the volume, for the history of the lumber industry has generally shown that there is a race between the lumberman and the settler, and the only cases where the lumberman has won out have been in those districts in which settlement has proved impossible. Hence, a fair line of demarcation between the lumbering and agricultural regions is necessary. Forest should be preserved in areas not suitable for agriculture, but on genuine arable land, such as the "Clay Belt" a different condition prevails.

The chapters dealing with the lumbering and pulp and paper industries contrast the types and motives of the pioneer settlements of Ontario and Quebec, and give a concise exposition of the effects of over-production on the life of the pioneer settlement. Whereas, in Ontario, "materialism and efficiency" is the controlling

motive, in Quebec "the life of the pioneer group is guided by the local priest of the settlement", and the "philosophy of simplicity and spiritual satisfaction" motivates the life of the settlers. But, ironically enough, a great proportion of them are only enabled to live by reason of the work provided and the energy with which the English industrial projects have been financed.

Of the people of the northern pioneer areas much might be said of their hard life, and of the conditions which induce monotony and degeneration. But, all our frontiers have displayed the same conditions, yet, out of them has emerged a people who eventually overcame local conditions. The authors indicate, however, that our northern conditions are somewhat different from those of the older frontiers. Quebec provides solidly French-Canadian conditions; no racial problems there. But, in Northern Ontario, English, French, Scandinavians, Germans, Finns, Ukrainians and Poles are found as scattered settlers, or in colonies, causing a disharmony which is detrimental to building a compact community, with a singleness of purpose. Most of these nationalities will eventually merge into real Canadians, except perhaps the Poles and Ukrainians, whose homeland conditions and ideals are so very different from those among whom they settle. It will take, perhaps, several generations before they merge into real Canadians.

Part II of the volume gives a résumé of the history of the development of the mining industries of the Yukon, Kootenay and Northern Ontario, and outlines the relation between the mining industry and permanent settlement. The marked change in the technique of mining, the efficiency of mobilization of the resources of exploitation, the high degree of mobility of labour and finance, and the great assistance given to the railways by increased freight and passenger traffic, are discussed. Also, it is pointed out that "mining largely implies a year-round movement of revenue-producing traffic and has tended towards stability during the present depression." Stimulation of industries engaged in the manufacture of supplies for mines has followed. Where paying ore-bodies have been exhausted, permanent hydro-electric power plants have supplied support for new and varied industries.



The brilliant performance of **Dolly Haas** in Julius Hagen's lavish Twickenham production "**Spy of Napoleon**" is one of the entertainment treats of the year. Like "**Broken Blossoms**" which brought Miss Haas the acclaim of critics and moviegoers, "**Spy of Napoleon**" will have an irresistible appeal to every lover of fine acting. Watch for these films at your local theatre.

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Courtesy Twickenham Film
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● **Dolly Haas** . . . petite, emotional and lovely as she is diminutive . . . took her place among the screen's great artistes with her gripping portrayal of "Lucy" in the magnificent British production of "**Broken Blossoms**" a new and modern version of Thomas Burke's famed Limehouse story. As a result, she was chosen for the lead opposite Richard Barthelmess in "**Spy of Napoleon**" the screen version of the stirring novel by Baroness Orczy, who wrote "**The Scarlet Pimpernel**" and many other hits. As the fascinating French spy in "**Spy of Napoleon**," Dolly Haas again suggests the wistful charm of Bergner, and by her appeal and artistry bids fair to become the outstanding screen discovery of the year. Of course, Miss Haas quickly discovered for herself that English classic in cigarettes . . . W.D. & H.O. Wills' Gold Flake. They have . . . since 1883 . . . been the "hit" with famous British theatrical folk.

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The appendices provide various vital statistics, such as information regarding the cutting of timber, racial composition of the population of some pioneer districts, and legislation regarding mining. As a reference book, or for good solid reading, this ninth volume of the series is well worth obtaining.

D. A. NICHOLS

Wild Life Ways (London: University of London Press, 1936, 3/6), is a collection of four true stories by the well known Canadian naturalist, HARPER CORY. Reflecting the conditions and surroundings of animal life, each describes the life and habits of one particular individual or species and every incident quoted is founded on fact. Those who have read Mr. Cory's "Grey Owl and the Beaver" or "Lovable Beasts" will find this book full of the same keen observation and humorous delight in the animals he has so faithfully observed. Youthful readers especially will be enchanted with the numerous spirited drawings by W. N. Parker.

The Voice of Atlas: In Search of Music in Morocco by PHILIP THORNTON, (Alexander MacLehose and Co, 1936, 8/6.) A fascinating book about Morocco by an author with a flair for Arabic ways of thought and life, who lived among Moors, Berbers and Jews, can speak Arabic, play three or four Arabic instruments and is a qualified snake-charmer. That he charmed the people successfully is evidenced by his delightful descriptions of their life and the remarkable study he made of their music and dances. "This study of Moroccan music is the more impressive, because Mr. Thornton can quote parallel instances of chants, hymns, *maqamat*, and the like which he has heard in Albania, Yugoslavia, Rumania and Turkey."

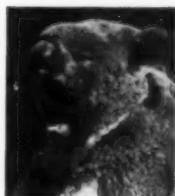
Genghis Khan, by RALPH FOX (New York: Harcourt Brace, 1936, (\$3.00)) "But this Temujin, that is Chinghis Khan is of such a kind, quality and aptness for this, for lording and for ruling that he will verily reach the King's dwelling," was a prophecy fulfilled in the career of this almost legendary figure, the Mongol nomad, who became "the Emperor of the World, the greatest conqueror since Alexander of Macedon." Born near the river Onon, (a tributary of the Amur), in Mongolia in 1162 son of Yesukai, a petty tribal chieftain, Temujin after a stormy youth of adventure, fighting and intrigue proclaimed himself Khan of the Mongolian nation in 1206 and when he captured Peking in 1215 completed the conquest of northern China. Ralph Fox has painted a faithful and vigorous picture of Genghis Khan and his age, the Mongols and their world as it existed in the late 12th and 13th century, and shows in a series of well-wrought chapters how the lands he conquered became under his ruthless methods and undoubted military and organizing genius a vast empire, which finally stretched from the Dnieper to the China Sea. Based on a study of original sources, this book has been hailed as the best biography of Genghis Khan yet written. It is eminently readable, illustrated by reproductions of Chinese drawings, fully indexed, and provided with a bibliography and two illuminating maps, one showing the Trade Routes of the Mongolian Empire between Europe and China, the other Europe and Asia about 1210.

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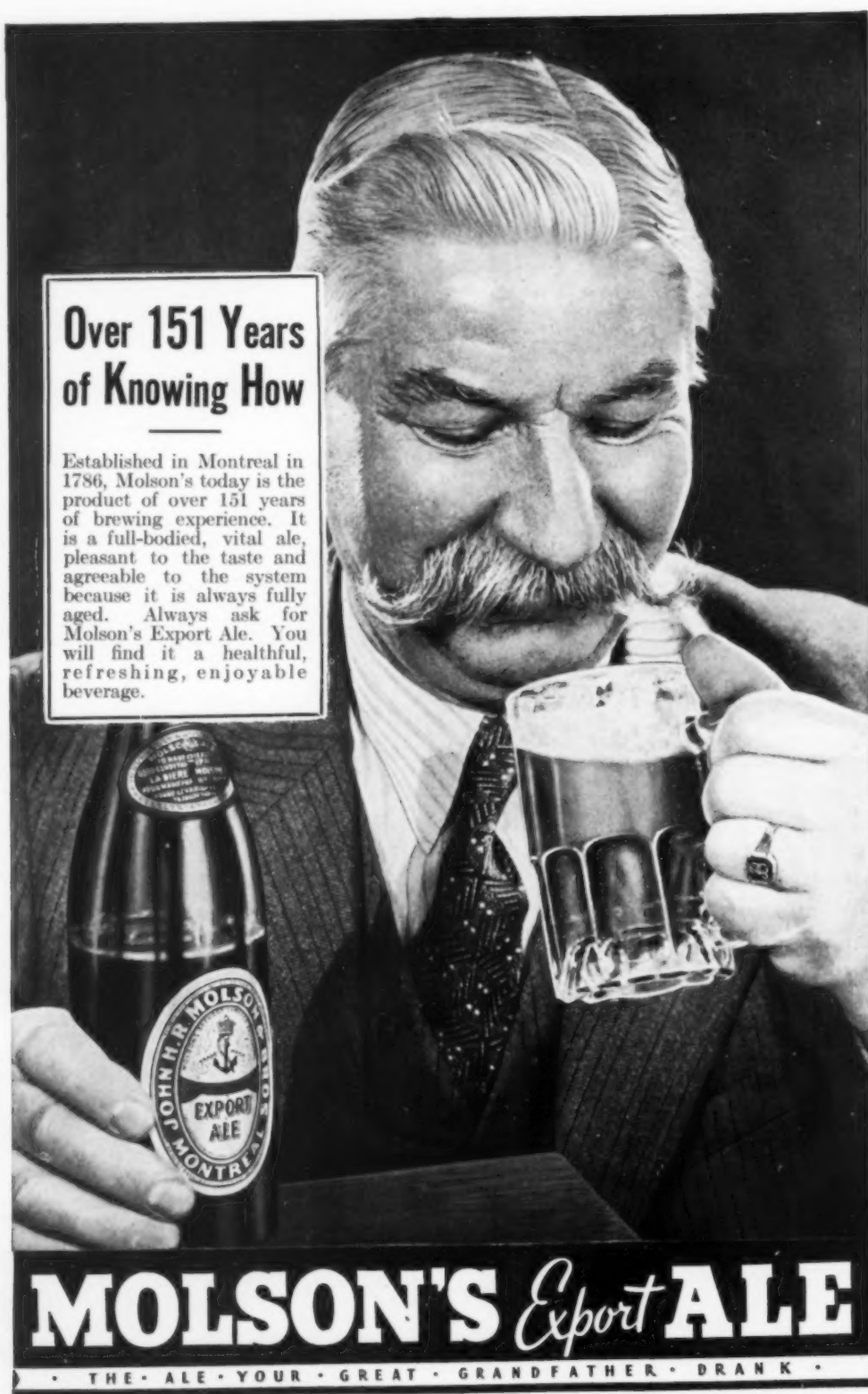
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The Reform of the Covenant - - - - -	Sir John Fischer Williams
The Revision of Treaties - - - - -	Charles Cheney Hyde
Justice, Security and the League of Nations - - - - -	Lemanus
England and the Eastern Question - - - - -	Sir John Marriott
Europe — the Next Stage - - - - -	Lord Queensborough
Panslavism and Hungary - - - - -	Laszlo Ruttikay
Standstill Problems - - - - -	Baron George Ullmann
The Castle of Buda in the Middle Ages - - - - -	Virgil Bierbauer
Hungary under Turkish Rule - - - - -	Paul Torok
The Regal Knight - - - - -	Zsolt Harsanyi
The Spirit of Hungarian Literature - - - - -	Dezso Keresztury
Transylvania - - - - -	Elsa Szasz
Two short stories - - - - -	C. Kos and A. Makkai
Petofi and his English Translators - - - - -	Frederic Norman
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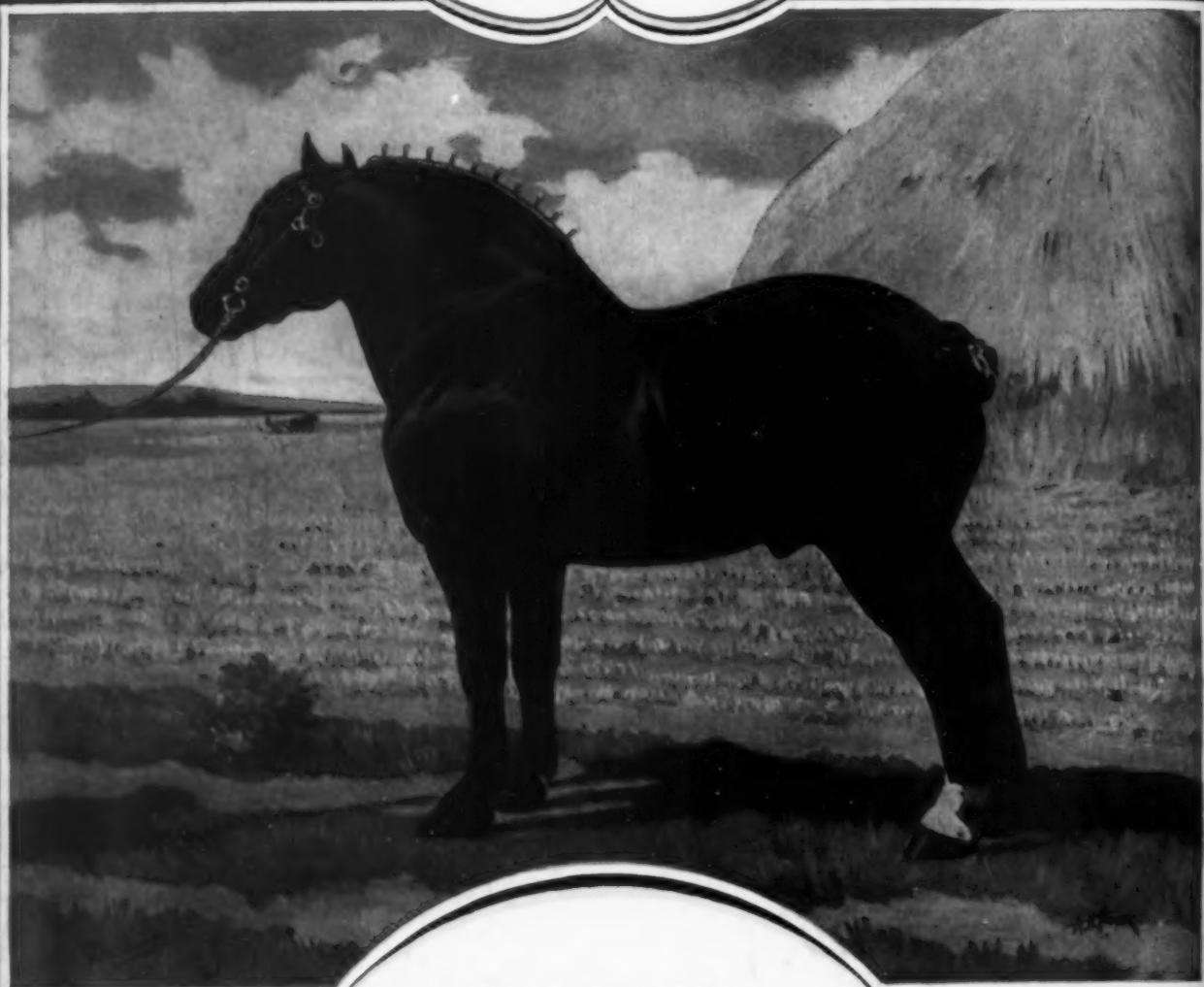
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